1966 Annual Report

DEPARTMENT OF DEFENSE • OFFICE OF CIVIL DEFENSE

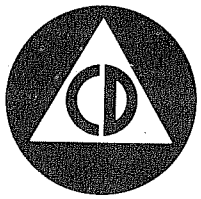
DEPARTMENT OF DEFENSE

OFFICE OF THE SECRETARY OF THE ARMY

Annual Report

of the

Office of Civil Defense



For Fiscal Year

1966

For sale by the Superintendent of Documents, U.S. Government Printing Office Washington, D.C. 20402 - Price 55 cents

THE SECRETARY OF DEFENSE

WASHINGTON

20 January 1967

MEMORANDUM FOR THE PRESIDENT

In compliance with section 406 of the Federal Civil Defense Act of 1950 and section 5 of Executive Order 10952 of July 20, 1961, I submit herewith the fifth annual report of the Office of Civil Defense, covering civil defense functions assigned to me.

Robert S. McNamara

ROBERT S. MCNAMARA

III

THE SECRETARY OF THE ARMY

WASHINGTON

23 December 1966

DEAR MR. SECRETARY:

Submitted by the Director of Civil Defense, Mr. William P. Durkee, and transmitted herewith is the fifth annual report of the Office of Civil Defense.

Sincerely,

Stanley Resor

STANLEY R. RESOR

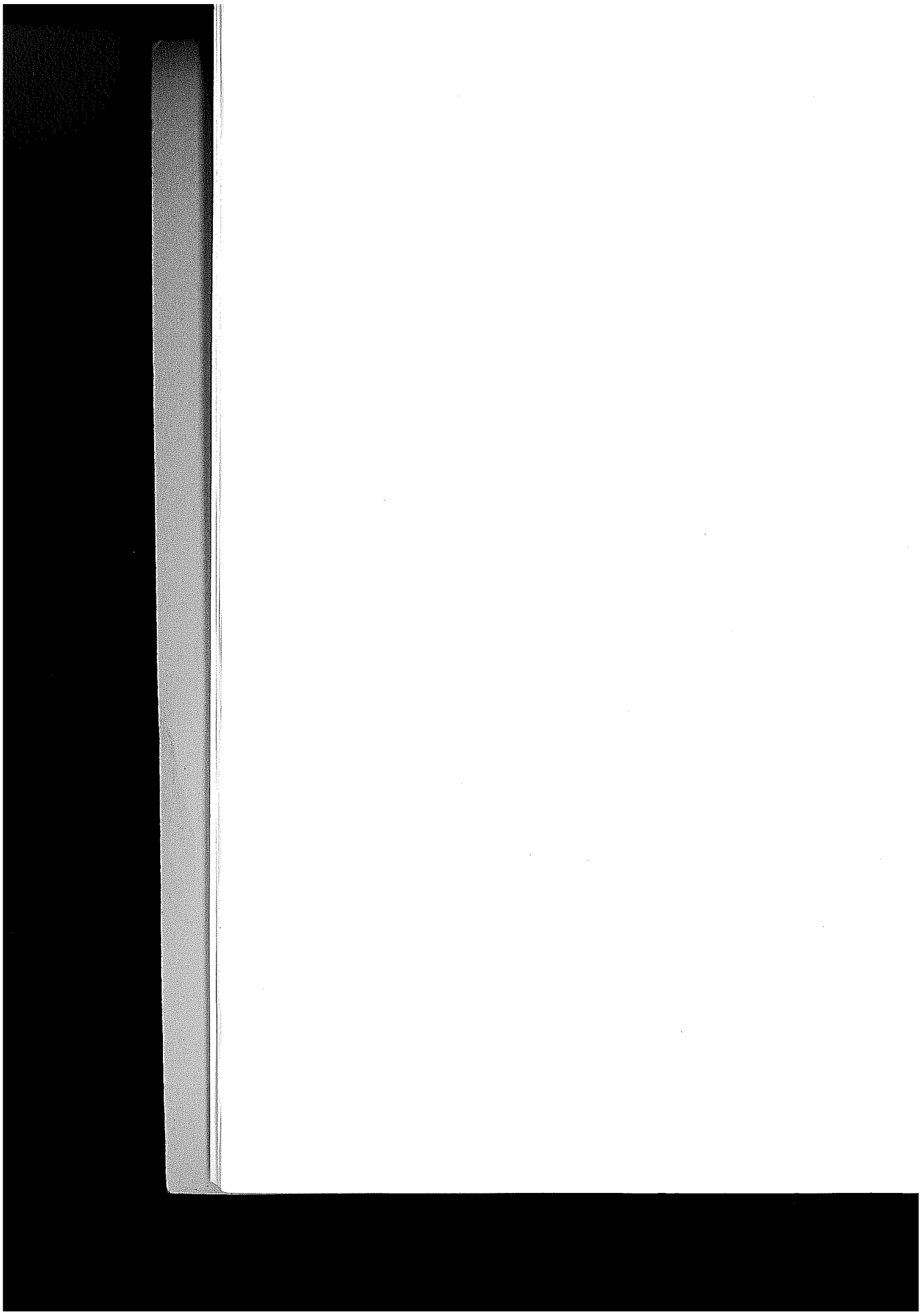
THE SECRETARY OF DEFENSE
DEPARTMENT OF DEFENSE

CONTENTS

APPENDIXES

ILLUSTRATIONS

TABLES



Part I

SUMMARY STATEMENT

In addition to substantial operational progress of the Office of Civil Defense during fiscal year 1966, several events of importance to the civil defense program occurred. Three principal ones were:

First, the President, in his annual budget message to the Congress included civil defense as one of the major programs within the *Continental Air and Missile Defense Forces* by stating:

> Interceptor aircraft, surface-to-air missiles, warning and control systems, and the civil defense program all contribute to the capability to limit damage to the United States in the event of an attack. The basic objective is to provide a balanced force which will reduce damage from various possible kinds of attack and make the problem of attacking the United States as complicated as possible. . . .

Second, the Secretary of Defense aptly defined the importance of fallout shelters. On May 7, 1966, in a letter to the Chairman, Independent Offices Subcommittee on Appropriations, United States Senate, the Secretary wrote:

> I have in my recent appearances before Congressional Committees emphasized the importance of fallout shelters as the foundation of any sound Damage Limiting program. The Chairman of the Joint Chiefs of Staff has agreed in this position, stating that:
>
> > I regard a full fallout shelter program as being coequal, if not preeminent, in relation to the whole damage limiting program. . . . all of our studies show that a fallout shelter program would be more effective in terms of lives saved than any other program we could buy. . . .

Third, the Office of Civil Defense began to provide financial support and guidance for local planning to assure effective use of available fallout protection in all communities of the United States and to identify those areas in need of further shelter development. Known as Community Shelter Planning (CSP), this innovation opened a new phase in civil defense preparations. During fiscal year 1966, the Office of Civil Defense began to place CSP contracts for work in large local planning areas, utilizing the services of local urban planners or professional planning firms. For smaller communities, the Office of Civil Defense began placement of CSP contracts with the States to provide professional urban planning services.

A summary of fiscal year 1966 major accomplishments associated with the principal components of the national civil defense program is presented in this part of the report.

Nationwide Fallout Shelter System

1. Public fallout shelter space for nearly 14 million persons was located in more than 10,700 facilities. This increased the nationwide shelter inventory to nearly 166,000 facilities, with an aggregate capacity for almost 150 million people.

2. More than 11,000 shelter facilities were licensed. The net total of more than 93,000 licensed facilities had an aggregate capacity for more than 89 million persons.

3. More than 7,500 facilities were marked. The grand total of more than 95,000 marked facilities had a total capacity for more than 85 million persons.

4. Survival supplies issued to more than 11,600 shelter facilities increased the total number of stocked facilities to nearly 75,000. Survival supplies in these shelters would be sufficient to take care of 68.8 million persons for 8 days or 41.3 million for 14 days.

5. Community Shelter Planning (CSP) contracts were executed to cover 28 large local planning areas in 21 States; CSP contracts to cover smaller planning areas were executed with 31 States.

6. Expansion techniques were used to increase available shelter space. These techniques included (a) surveys of small structures, (b) surveys of fallout protection in homes, (c) prototype distribution of packaged ventilation kits, and (d) use of architectural and engineering design—"slanting"—to incorporate shelter in new buildings.

7. As a result of professional and technical support of the nationwide fallout shelter system, nearly 2,000 fallout shelter analysts were certified, making a net total of more than 11,000 qualified analysts. Architectural and engineering development centers were operated at eight universities.

8. Net gain in number of State and local emergency operating centers completed or in process of completion was 642, or 33 percent, making a total of 2,585. Of this number, 772 were financed with the help of Federal matching funds.

Complementary Civil Defense Systems

1. The National Warning System (NAWAS) was strengthened by increasing the number of warning points from 685 to 761; 69 extensions or alternate warning points were placed in fallout protected emergency operating centers, and 235 warning points were covered by OCD funding agreements to provide this protection.

2. The Civil Defense Telephone and Teletype System (NACOM 1) was strengthened by installation of facilities for conducting voice conferences between OCD headquarters and all its regional offices; teletype circuits were installed to permit rapid communication between four points of adjoining Canadian and U.S. regions.

3. The Civil Defense Radio System (NACOM 2), serving as a backup system to NACOM 1, was extended to 13 additional States,

making it operational in 37 States as well as in the District of Columbia, Puerto Rico, and the Canal Zone.

4. Of 2,547 broadcast stations in the Emergency Broadcast System, 587 selected radio stations participated with the OCD in a protection program to assure operational capability in emergencies. This was an increase of 47, and 370 had completed construction for fallout protection.

5. The nationwide radiological monitoring network was strengthened by a net gain of 2,888 monitoring stations, increasing the grand total to 58,062. Shelter radiological monitoring capability was strengthened by placement of monitoring equipment in nearly 10,000 additional public fallout shelters, making a total of more thann 77,000 so equipped.

6. Damage assessment capabilities were strengthened by further improvement in survival resources data as well as by distribution of aids and dissemination of information on damage assessment techniques.

Federal Assistance

1. In addition to the 50 States, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands, more than 4,000 local governments, covering about 89 percent of the national population, participated in the civil defense program through some form of Federal assistance. In many of these governments, State and local civil defense organizations were staffed by more than 5,400 civil defense personnel, paid with the help of Federal matching funds; in addition, many times this number of State and local government employees and volunteers had emergency assignments and training.

2. The net gain of key civil defense personnel and instructors trained at OCD schools was 2,877, making a total of nearly 29,000 so trained since fiscal year 1960. More than 53,000 State and local civil defense personnel participated in training administered through the Civil Defense University Extension Program (CDUEP), making a total of more than 133,000 participants since CDUEP was started in fiscal year 1963.

3. Radiological montitors trained during fiscal year 1966 by the Army, in the CDUEP, and through the Civil Defense Adult Education Program (CDAEP) totaled more than 37,000, including more than 3,000 instructors.

4. Shelter managers trained in fiscal year 1966 totaled more than 10,000, including almost 2,000 instructors.

5. In public education, more than 350,000 were trained in *Personal and Family Survival*, increasing the cumulative total to approximately 1.5 million; more than 1.7 million persons were reported trained in medical self-help, making a cumulative total of 3.6 million,

plus an estimated half million persons informally exposed to the subject by television and other media.

6. Rural civil defense information and education programs continued to operate in all the States and in Puerto Rico. Civil defense information was presented by 57,000 local leaders to approximately 1.1 million persons. Rural civil defense information was featured on more than 9,000 television and radio programs, by more than 4,000 exhibits, and in 2.5 million copies of publications distributed in rural areas.

Research

1. Research continued to produce information needed for the realistic planning and practical operation of the civil defense program.

2. Shelter ventilation criteria were developed for operational use in establishing a prototype system of procurement and distribution of packaged ventilation kits for public fallout shelters.

3. Improved methods were developed for calculating the amount of fallout protection provided by basements in residences.

4. More realistic criteria were developed to evaluate the hazard of food and water contamination by radioactive fallout; earlier estimates of this hazard were found to be too severe.

5. Evidence was developed that indicates growing crops may be more susceptible to damage by radioactive fallout than previously believed.

6. Strategic studies indicated the usefulness of placing greater emphasis on preparation for improving civil defense capabilities during crises in contrast to earlier emphasis on preparation for surprise attack.

Supporting Activities

1. Plans were developed for coordinated action at all levels of government in disseminating authoritative emergency information to the public; experience in peacetime disasters proved helpful in strengthening these plans.

2. Maximum use of community resources in support of local civil defense programs was encouraged through liaison with Federal agencies and with selected national associations and organizations. Guidance was also extended to local governments and community organizations.

3. Civil defense information was addressed to the public in numerous publications and periodicals, in four new motion pictures, in spot radio and television announcements, through a series of weekly radio programs, and by wide use of exhibits and posters.

4. Participation of industry in the civil defense program was strengthened by liaison with major national organizations, industrial firms, and Federal agencies dealing directly with industry. Activities

included conferences, seminars, and workshops, as well as dissemination of guidance information by exhibits, motion pictures, and distribution of about 400,000 copies of civil defense publications.

5. Labor support of the civil defense program was strengthened by continuous liaison with the labor and trade unions, principally through the American Federation of Labor and Congress of Industrial Organizations (AFL–CIO). Activities included adoption of supporting resolutions, training participation of leadership groups, assistance during disasters, and dissemination of civil defense information with the cooperation of the labor press.

6. Participation in international activities strengthened civil defense in several ways. Communication lines between adjoining United States and Canadian civil defense regions were established. Work with the North Atlantic Treaty Organization and the Central Treaty Organization helped provide worldwide perspective to the civil defense effort.

Part II

PROGRAM STRUCTURE AND SUPPORT

Development of the civil defense program during fiscal year 1966 was continued within the framework of the balanced program established by the Department of Defense in fiscal year 1962. The operational status of the five major components of this program, discussed separately in other parts of this report, are: (1) A nationwide fallout shelter system; (2) complementary civil defense systems that include nationwide warning, communications, radiological monitoring and reporting, and damage assessment; (3) Federal assistance to State and local governments; (4) research; and (5) various supporting activities.

MAJOR EMPHASIS

Support of the program at the Federal level was coordinated by the Office of Civil Defense and included resources of the Department of Defense as well as those of other Federal agencies. An important element of this coordination and support in fiscal year 1966 was the beginning of a new phase in civil defense operational planning. This innovation, titled *Community Shelter Planning* (CSP) (see this subject in part III), became the foremost program element of civil defense in fiscal year 1966. CSP is designed to help every community in the United States utilize the best available fallout protection for its people and to identify those areas that need further shelter development.

To develop additional fallout shelter space, the nationwide architect-engineer survey of existing large buildings was continued. This survey included buildings that meet minimum protection standards and have a capacity for 50 or more persons. Several techniques were used to locate additional protected space in areas with unfilled requirements for standard fallout shelters; i.e., shelters inside which the radiation would be reduced to one-fortieth or less of that existing outside and therefore designated as having a protection factor (PF) of 40 or higher. (See *Expansion Techniques* in part III.) Professional advisory services of architects and engineers were provided to incorporate fallout protection in new construction at little or no additional cost. Smaller structures with potential shelter capacity for at least 10 but less than 50 persons were surveyed. A prototype system of procurement and distribution of packaged ventilation kits was started

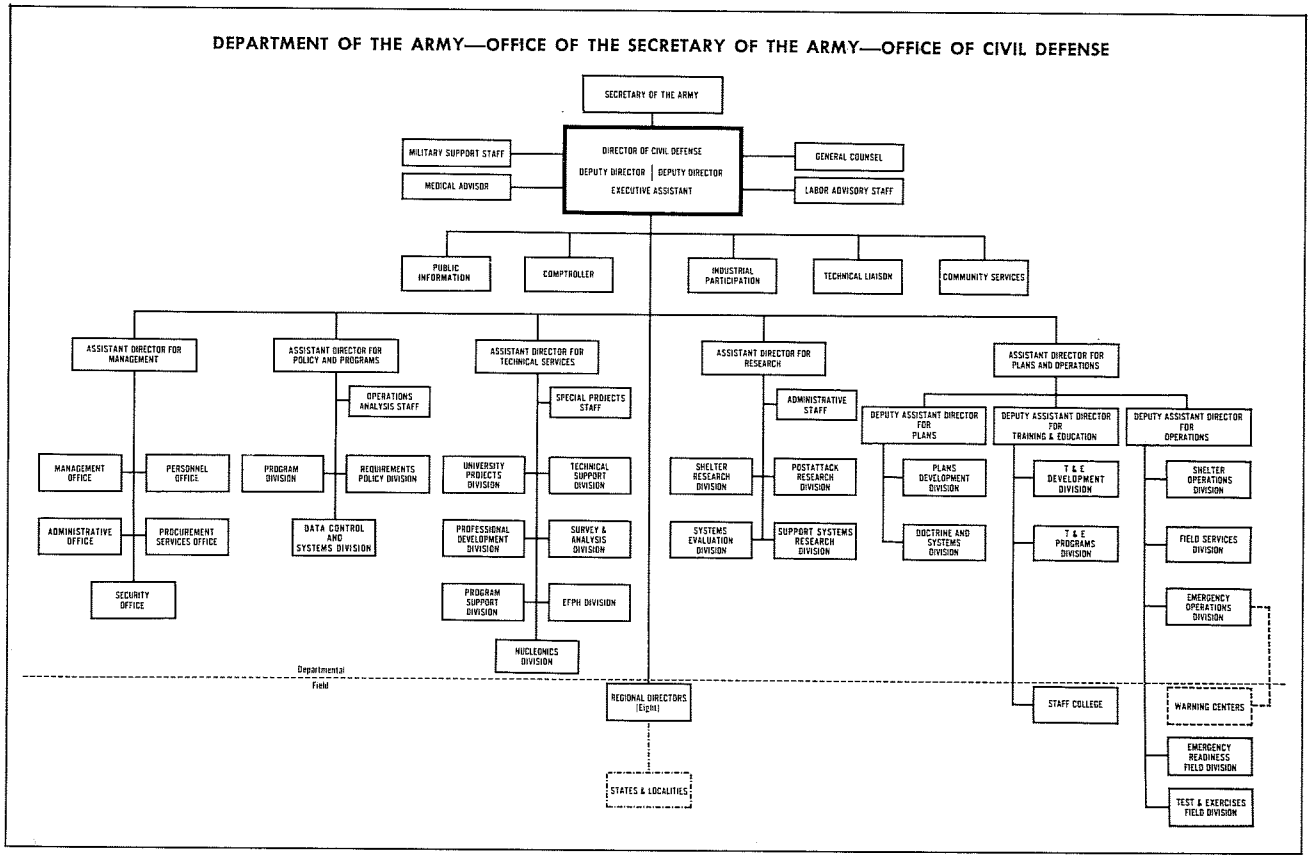


Figure 1.—OCD organization chart.

to increase the shelteree capacity of inadequately ventilated shelters. A home fallout protection survey was conducted in Rhode Island, and similar surveys were planned for other States.

Finally, a plan was proposed to the Congress for testing the feasibility of using Federal funds to include fallout protection in new construction as a means of meeting unfilled fallout shelter requirements. This plan was devised as an experimental element of the shelter program to stimulate use of construction design techniques that would increase fallout protection. Payments limited to one percent of construction costs would have been made for the purpose of including inexpensive dual-use fallout shelter in new public non-Federal or privately owned buildings. However, the $10-million fiscal year 1967 appropriation requested for this purpose was not approved by the Congress.

ORGANIZATION AND MANAGEMENT

Primary responsibility for conducting the development and operation of the civil defense program at the Federal level is vested in the Office of Civil Defense (OCD). The Director of Civil Defense in charge of the OCD is directly responsible to the Secretary of the Army. Legally, the bases for this responsibility are departmental directives isued by the Secretary of Defense subsequent to Executive Order 10952, *Assigning Civil Defense Responsibilities to the Secretary of Defense and Others*, effective August 1, 1961. The Assistant Secretary of Defense (Civil Defense) was in charge of the OCD from August 31, 1961, to March 31, 1964, when the civil defense functions and responsibilities delegated to the Secretary of Defense by Executive Order 10952 were assigned to the Secretary of the Army, who established the OCD within his office and delegated the functions to the Director of Civil Defense.

In accordance with one of the principles enunciated in a statement by the Secretary of Defense on July 20, 1961, the civil defense program has remained under civilian direction and control. The organizational structure of the OCD at the end of fiscal year 1966 was as shown in figures 1 and 2.

In the *Independent Offices Appropriations Act for Fiscal Year 1966* (Public Law 89–128), the Congress authorized a personnel ceiling for OCD of 800 positions; i.e., 200 less than were authorized for the preceding fiscal year. During the year, the number of OCD permanent employees was reduced to comply with the ceiling set by the Congress. This was done primarily by closing two training centers (see *Professional and Technical Training* in part V) and by attrition, as personnel left the OCD without being replaced; e.g., 40 employees retired during this time.

245–764 O—67——2

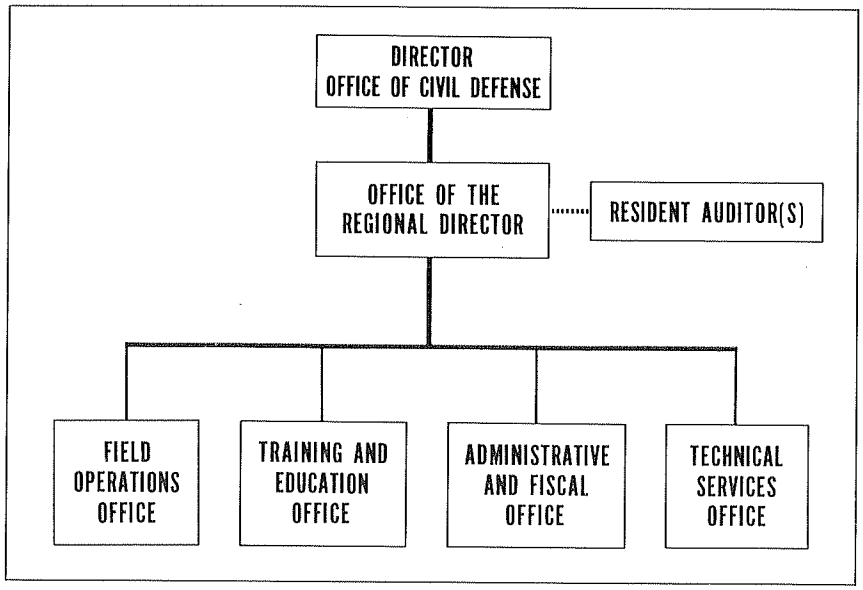


Figure 2.—OCD regional offices organization chart.

In addition, the active year-end personnel strength was reduced below the authorized position ceiling by mass transfer of personnel and their assigned functions to other components of the Department of Defense. For example, 53 personnel performing warning and communications functions were transferred to the U.S. Army Strategic Communications Command, 13 with supply management functions were transferred to the Defense Supply Agency, and 18 with shelter engineering functions were transferred to the U.S. Army Corps of Engineers. Consequently, the number of full-time, permanent OCD personnel on board was reduced from 975 on June 30, 1965, to 727 on June 30, 1966. The year-end strength consisted of 347 at OCD headquarters, 337 at the 8 OCD regional offices (see fig. 3), and 43 at the OCD Staff College and other field locations.

The transfer of personnel and functions resulted in further integration of civil defense with military defense. This was in accord with another principle enunciated in a statement by the Secretary of Defense on July 20, 1961: "In the age of thermonuclear war, civil defense must be integrated with all aspects of military defense against thermonuclear attack."

The OCD continued to rely increasingly upon management information systems as a source of data for planning, monitoring, and evaluating progress of various program elements. Program Evaluation Review Techniques (PERT) were applied in conducting community shelter planning, home fallout protection surveys, and in the procurement and distribution of packaged ventilation kits. (See *Expan-*

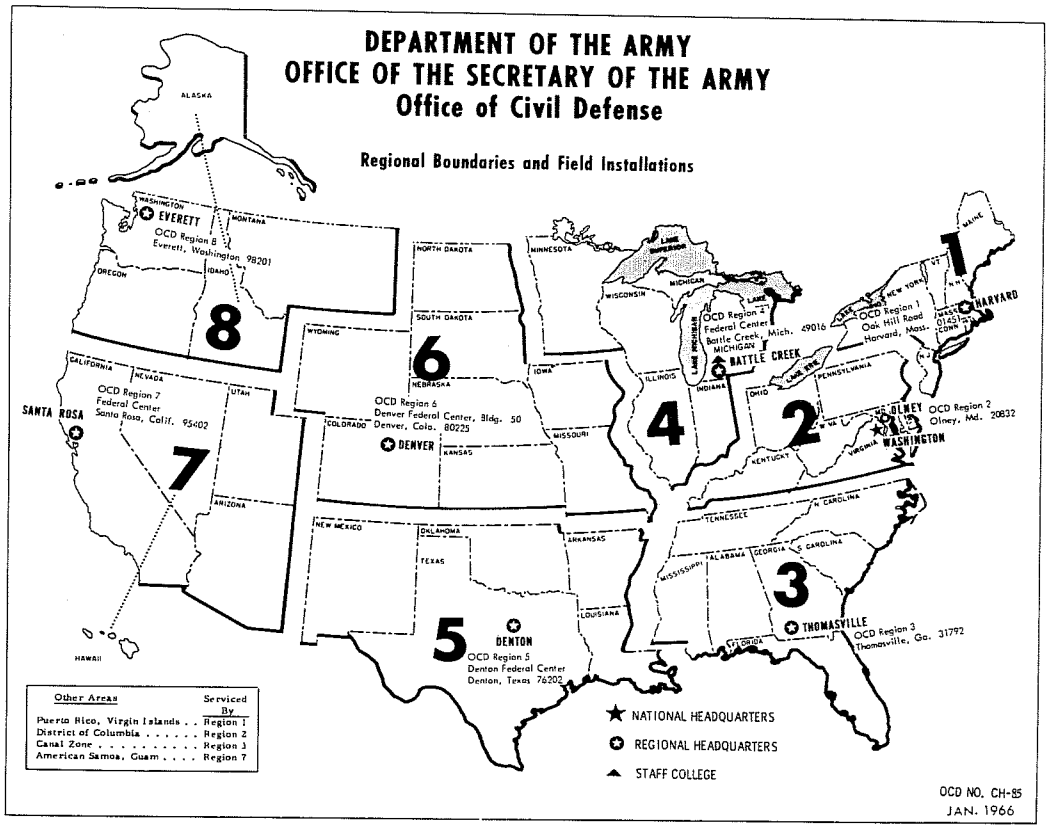


Figure 3.—OCD regions.

sion Techniques in part III.) Major portions of an Integrated Management Information System (IMIS) were established to provide civil defense information at all levels of government. (See *IMIS* under *Management Control* in part V.) Automatic data processing techniques were also applied to other major projects, and an automated log monitoring system was used to manage daily activities of many projects critical to OCD operations. Improvements to the automatic data processing system and extension of its use were continued throughout fiscal year 1966.

During fiscal year 1966, audits of financial assistance program administration procedures and manpower utilization were completed at six OCD regional offices, and detailed audits of financial assistance grants were conducted in every State and in more than 600 of their political subdivisions. Results of these audits produced information needed to assure compliance with program requirements and to improve efficiency in program administration as well as to clarify operational procedures and policy decisions.

By the end of fiscal year 1966, interim audit reviews of 20 radiological maintenance agreements with various States, the District of Columbia, and Puerto Rico had been completed. (See *Distribution and Servicing of Instruments* in part IV.) These reviews led to a clarification of the cost principles and terms covered by the agreements.

FEDERAL SUPPORT

The resources of the Department of Defense, including those of the Armed Forces, were widely used in developing and operating the civil defense program, as were those of numerous other Federal agencies. For the fifth consecutive year, the OCD continued to develop and coordinate this support at the Federal level.

Department of Defense Resources

Extensive use of DOD resources is indicated throughout this report, but some of the major support activities are summarized in this section. Most of these were continued from previous years. However, as explained in *Organization and Management* (see preceding section), some civil defense functions were more fully integrated into DOD components during fiscal year 1966.

The nationwide fallout shelter survey was conducted for the OCD by the Army Corps of Engineers and the Naval Facilities Engineering Command. In addition, these agencies made special surveys of small structures in community shelter planning areas and assisted in conducting engineering case studies and training fallout shelter analysts. The Army Corps of Engineers, under contractual arrangements, operated the Protective Structures Development Center at Fort Belvoir, Va., as well, and provided fallout protection for OCD-selected radio

stations in the Emergency Broadcast System. The National Civil Defense Computer Facility was also operated by the Army Corps of Engineers.

The management and distribution of OCD supplies was handled by the Defense Supply Agency in accordance with OCD policy direction and control. Except for procurement of radiological instruments by the General Services Administration, this included all logistical operations involving shelter supplies, management of the OCD emergency equipment inventory, and the use of technical military capabilities for food container research and development of procurement specifications, when needed. The Military Traffic Management and Terminal Service determined routes, carriers, and transportation costs for shipping shelter supplies from manufacturers to warehouses and from one warehouse to another.

Under OCD policy control, the U.S. Army Strategic Communications Command funded and was responsible for management, operation, and maintenance of Federal warning and communications systems used by the OCD. This included the National Warning System, the Civil Defense Telephone and Teletype System, and the Civil Defense Radio System. For warning and supporting information, the OCD warning centers depended upon the North American Air Defense Command.

The Adjutant General's Office (TAGO), Department of the Army, provided publications services; i.e., procurement of printing and binding, distribution of new publications, maintenance of reserve stocks, and response to requisitions from State and local governments. TAGO controlled the selection and assignment of Standby Reserve officers of all the military services to civil defense positions in State and local governments. A program for use of Standby Reserve Army personnel in civil defense field offices was also administered by TAGO.

Information and studies supporting the role of civil defense in national strategy and, as required, for OCD damage assessment and operational planning, were furnished by the Joint Chiefs of Staff, the Defense Atomic Support Agency, the Weapons Systems Evaluation Group, and the National Military Command Systems Support Center.

Military resources were provided by subordinate commands of the U.S. Continental Army Command to train local personnel in radiological monitoring and explosive ordnance reconnaissance. OCD training and educational films were produced by the Army Pictorial Center. The Army Military Police School, Fort Gordon, Ga., included civil defense material in courses offered to industrial managers and executives.

Army Reserve and National Guard personnel, as well as personnel of civilian agencies were provided training in the handling of mass

casualties by the Surgeon General of the Army. He also contributed funds to the Medical Education for National Defense Program carried on in medical schools to train physicians to cope with disaster conditions, and he made Reserve and National Guard component medical units and personnel available for training civil defense personnel; training demonstrations and exercises in handling mass casualties were also included.

In the Department of the Air Force, the Civil Air Patrol continued to cooperate with the OCD in planning procedures for performing emergency aerial missions. Security surveys of selected industrial facilities important to the national defense were conducted by industrial defense officers of the Army, Navy, and Air Force. These included inspection of physical security and emergency preparedness measures with recommendations, if necessary, for remedial action consistent with OCD industrial civil defense guidance.

OCD payroll and disbursing services were provided by the Army Finance Office, and surplus property for civil defense use was made available by DOD agencies.

Military Support

Revised policy direction and guidance on the subject *Military Support* are given in DOD Directive 3025.10, issued by the Secretary of Defense on March 29, 1965. The directive is a guide to the military services in planning for and controlling military support operations during civil defense emergencies by utilizing the State Adjutants General and their headquarters. In effect, the directive implemented a plan to provide each State with a military headquarters for planning and controlling military support operations during civil defense emergencies. Approved by the Secretary of the Army and the State Governors, the plan simplifies and makes more effective the coordination and control of military resources made available by all military services and DOD agencies to assist State governments in emergencies.

During fiscal year 1966, work on placing the plan in operation in accordance with the revised directive was continued. Considerable progress was made in preparing supporting regulations by all the military services and in expanding State military headquarters to provide (1) coordination, planning, and exercise of operational employment of military forces in support of civil defense by State Adjutants General and their staffs; (2) active participation by State Adjutants General and their alternates in preattack planning for military support of civil defense; (3) military support planning within each State at State military headquarters; (4) mobilization of State military headquarters prior to or immediately following nuclear attack on the United States; and (5) subsequent operational employment by the State Adjutants General, or their alternates, of the

military forces provided for support of civil defense. Upon mobilization, a predesignated alternate will be named by State authorities if the Adjutant General is scheduled for another State position, or if he is not federally recognized.

The Commanding General, U.S. Continental Army Command (USCONARC), and the Continental United States (CONUS) Army Commanders guide and control the State military headquarters in performing their civil defense missions, except in Alaska, Hawaii, and the Commonwealth of Puerto Rico, where similar headquarters are under the Commanders of appropriate Unified Commands. Each CONUS Army Commander and the appropriate Commander of Unified Commands serving Alaska, Hawaii, and Puerto Rico will maintain current listings of military forces in his area of operations. The lists will show, in order of priority, the degree of probable availability of these forces for support of the civil defense mission.

Assignment of State Adjutants General for carrying out the civil defense military support mission provides the CONUS Army Commanders with State military headquarters which have the authority and capability of using available military resources within the States in support of State and local civil defense emergency operations. Military resources available for this purpose would be those not engaged in essential military operations. In cooperation with the State Civil Defense Director, each State Adjutant General is responsible for developing detailed operational plans.

Upon mobilization of State military headquarters, Army, Navy, and Air Force personnel would be made available to them in proportion to the representation of each service within the State. Reserve officers predesignated for this duty may serve with State military headquarters during annual field training and other training assemblies.

Manpower authorized to plan and conduct the military support mission totaled 279 at the end of fiscal year 1966: 36 military and 18 civilian personnel at USCONARC and CONUS Army Headquarters; 3 military personnel and 1 civilian at the National Guard Bureau; and 221 National Guard technicians at State headquarters.

During fiscal year 1966, a joint monitoring team, consisting of representatives from the U.S. Army, Navy, and Air Force, the National Guard Bureau, and the OCD, visited each CONUS Army Command and a representative number of State Adjutants General and State civil defense officials to evaluate the effectiveness of work accomplished in executing the military support plan. The team concluded that the role of the State Adjutants General in carrying out the plan is feasible and sound, and that substantial progress had been made in executing the plan. Joint action was initiated to solve the problems identified by the team.

Federal Agency Coordination

The OCD continued to coordinate the civil defense work of Federal agencies to assure that functions were carried out in consonance with civil defense responsibilities assigned to the Secretary of Defense by Executive Order 10952, July 20, 1961. Much of this coordination was achieved within the framework of several other Executive orders that have assigned civil defense responsibilities and emergency preparedness functions to various departments and agencies.

Effective coordination and progress were also achieved in civil defense through contractual arrangements with several departments and agencies. This enabled the OCD to use their special competence in coordinating and expediting many of its functions in accordance with Executive Order 10952. These arrangements are discussed, as applicable, throughout this report; e.g., the Civil Defense Adult Education and the Medical Self-Help Programs conducted for the OCD by the Department of Health, Education, and Welfare; rural civil defense information and education services performed by the Extension Division of the Department of Agriculture; and various surveys and damage assessment projects carried out by the Bureau of the Census.

For the third consecutive year, the Interagency Civil Defense Committee continued to function as an effective point of contact for the OCD and other agencies in their pursuit of civil defense objectives. The Regional Civil Defense Coordinating Boards, established in fiscal year 1963, also continued to be helpful in coordinating civil defense planning of military departments and Federal agencies with State and local civil defense operations. The OCD continued to work closely with the Office of Emergency Planning, as well as with other Federal agencies, in the development of postattack plans for the distribution of survival resources. (See *Damage Assessment* in part IV.)

STATE AND LOCAL PARTICIPATION

Readiness of State and local governments to carry out their civil defense functions is a principal objective of the civil defense program. At the end of fiscal year 1966, the 50 States, the District of Columbia, Puerto Rico, Guam, the Virgin Islands, and more than 4,000 local political subdivisions had active official civil defense programs that were documented by formal program papers submitted to and approved by the OCD. (See *Management Control* in part V.) Further evidence of nationwide participation was the fact that nearly 72 percent of all counties and almost 92 percent of the larger cities had some stocked public fallout shelters.

More than 5,400 full- or part-time civil defense personnel, paid with the help of Federal matching funds (see *Financial Assistance* in part V), functioned as part of State and local civil defense organizations

that are legally an integral part of civil government under the authority of elected officials. Under OCD guidance, these organizations also relied upon many additional State and local government employees and volunteers trained to carry out specific civil defense assignments.

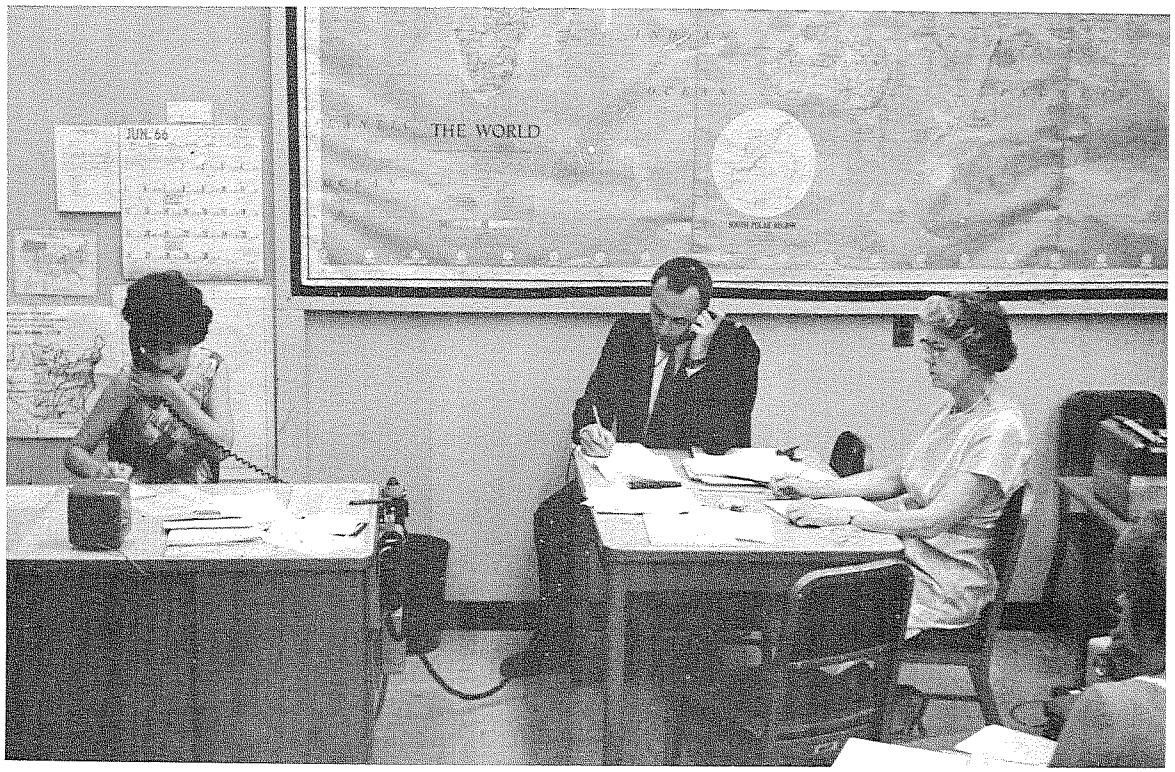
As in past years, the performance readiness of many State and local civil defense organizations was tested in dealing with the effects of peacetime disasters. Several major disaster activities in which civil defense played a major role during fiscal year 1966 are described in the next few paragraphs.

1. *Northeast power failure, November 9, 1965.*—Beginning about 5:15 p.m., the power failure directly affected an estimated 30 million people in the United States and Canada and lasted from several minutes in some communities to more than half a day in others. States most seriously affected were Connecticut, Massachusetts, New York, Rhode Island, and Vermont. (See fig. 4.) These States activated and manned their State emergency operating centers, alerted and placed on call the State National Guard, maintained communications with all government levels involved, and transmitted pertinent information to newspaper, radio, and television media. Local civil defense organizations likewise activated their emergency operating centers and made auxiliary generators and communications equipment available to public service agencies. Civil defense volunteers assisted police and fire departments, and in many areas trained civil defense radio operators gave valuable assistance.

At the beginning of the power failure, the OCD readily ascertained from the North American Air Defense Command that no military emergency existed. By means of the National Warning System, information on the nature of the emergency and on progress in restoration of electrical power was sent to all warning points. Consequently, government officials and the public were well informed and panic was averted.

In the affected area, 138 commercial radio stations were disabled, but 74 of them used emergency generating equipment to resume operations. The emergency equipment used by 31 of the 74 stations had been furnished by the OCD as part of the program of providing protection to selected member stations of the Emergency Broadcast System. (See *Communications* in part IV.) Many of these radio stations had broad area coverage. State Governors as well as the general public and the press commented favorably on civil defense operations during the emergency. Typical of headlines that appeared in area newspapers were "CD Workers a Beacon in Our Darkest Hour," the *New York Journal American*, November 10; "OCD Ready When Fuse Blew," *The Washington Daily News*, November 11; and "Sneak Preview of CD Brings Raves," the *Boston Sunday Globe*, November 14.

2. *Northeast blizzard, January 29–31, 1966.*—Accompanied by blizzard winds, a snowfall of 1 to 2 feet with drifts up to 15 feet high cov-



—MCDA photo.

Figure 4.—Staff of Massachusetts Civil Defense Agency at work. Scene at the State's underground operating center, Natick, Mass., during the Northeast power failure, Nov. 9, 1965.

ered all or major portions of the States of Delaware, Maryland, New Jersey, New York, Pennsylvania, Virginia, and West Virginia, as well as the New England States. As a result of blocked roads, many people lacked food, fuel, clothing, and medical care; thousands of people were stranded along highways.

Through regional office headquarters, the OCD evaluated and coordinated civilian requests for emergency military airlift missions, food supplies, and snow removal equipment and coordinated the efforts of State and local civil defense organizations with those of the Office of Emergency Planning. Most Governors of affected States declared a state of emergency, activated emergency operating centers, and called on the State National Guard to assist in recovery operations. State civil defense offices used communications facilities of emergency operating centers to coordinate storm recovery operations conducted by various State agencies. Member stations of the Emergency Broadcast System were used extensively by State and local civil defense officials to communicate with the public.

A typical reaction to the role of civil defense organizations and personnel during this emergency was that expressed by Governor J. Millard Tawes of Maryland: "Through your efforts, the potentially disastrous situation of persons stranded without food, clothing, fuel, and medical assistance was minimized. Relief operations were well organized and efficiently carried out and the danger to the citizens of our State was effectively reduced."

3. *Hurricane Betsy, September 1965.*—After grazing the southern tip of Florida, Hurricane Betsy devastated the heavily populated area of southern Louisiana, including New Orleans. Labeled one of the great hurricanes of this century by the U.S. Weather Bureau, Betsy caused the death of 85 persons and the destruction of property valued at an estimated $1 billion.

Local civil defense organizations in both States participated effectively in getting people away from exposed or low-lying areas into storm shelters. Compared to the 550 whose death was caused by Hurricane Audrey in 1957 when residents of Cameron Parish, La., failed to heed civil defense warnings, the loss of life was light. Governor John J. McKeithen of Louisiana later said, ". . . Civil defense has given our people the assurance that everything which can humanly be done is being done. I'm awfully proud of the job my Office of Civil Defense is doing."

In representing Florida's Governor Hayden Burns at congressional hearings before the Flood Control Subcommittee of the House Public Works Committee on September 25, 1965, Mr. Leland Tinsley said: "In Florida, we treat hurricanes as if they were enemy attacks. We bring our civil defense organization into being immediately when the U.S.

Weather Bureau reports a hurricane watch on any part of Florida. This means State and local governments. This has been declared by Governor Burns to be their responsibility, and so it is. . . . We have had great success in reducing loss of life."

As a result of Hurricane Betsy, a barge filled with liquid chlorine was sunk in the Mississippi River at Baton Rouge, La. The Louisiana Civil Defense Agency coordinated safety precautions taken to protect endangered people until the barge was safely raised on November 12, 1965. Evacuation of 571 invalids and chronically ill persons was accomplished by 2 hospital trains. In addition, 12,000 residents were evacuated as a further precautionary measure.

4. *Other major disasters during fiscal year 1966.*—These included tornadoes in Alabama, Florida, Kansas, and Mississippi during the spring months of 1966. State and local civil defense organizations functioned effectively in the communities struck by these storms. For example, in Kansas, the lives of thousands of persons were believed to have been saved when they heeded civil defense sirens that sounded warnings of impending tornadoes. In Alabama and Mississippi, civil defense units from the surrounding areas rushed rescue teams to the stricken communities. In Florida, civil defense personnel from many parts of the State were sent to the Tampa and St. Petersburg area to help carry on emergency operations.

Spring floods of 1966 caused great damage to communities in Minnesota, North Dakota, and Wisconsin. Emergency plans were quickly placed in operation by State and local civil defense organizations in these communities. This resulted in giving effective warnings and instructions to the public. Engineering equipment, stockpiled for civil defense, was used to drain low-lying areas, and dikes were reinforced by sandbags. Persons in homes endangered by flood waters were evacuated. Several organizations, including the American National Red Cross, the Salvation Army, the State National Guard, the Civil Air Patrol, and the Army Corps of Engineers, cooperated in disaster relief efforts. Sanitation and traffic-control measures were taken, and local railroads helped to obtain boxcars for shipment of grain to locations away from flooded areas.

On March 9, 1966, a tank of chlorine gas was among 33 cars of a freight train derailed at Charlemont, Mass. This created a hazard to the safety of people within an area of several square miles. State and local civil defense organizations quickly invoked safety measures. Governor John Volpe of Massachusetts described the significance of this action on March 11, 1966, when he stated: "The orderly exodus of more than 4,000 persons from the towns of Charlemont, Shelburne Falls, and Buckland was a demonstration of confidence and reliance of those persons in the leadership and capabilities of their civil defense, local officials and protective organizations, the State police and

American Red Cross. Evacuation of these Franklin County towns in the face of a threat of possible exposure to chlorine gas emphasizes the importance of community planning to cope with any and all types of disaster."

Dealing with Hurricane Alma in June 1966 was a constant challenge to civil defense organizations in Florida and Georgia for several days. Casualties included the death of 5 persons and injury of 12. Property damage was estimated at $5 million. Actions that contributed to the low casualty and property damage rate included: (1) Early warning and continuous reports issued by the U.S. Weather Bureau, (2) improved civil defense communications, and (3) prompt activation of emergency operations plans to protect life and property.

FINANCIAL SUMMARY

Funds available during fiscal year 1966 for carrying out civil defense operations totaled approximately $130.4 million: $106.8 million of new fiscal year 1966 appropriations, $0.2 million in reimbursable orders from other agencies, and $23.4 million carried over into fiscal year 1966 from prior year appropriations. Of the total amount available, $119.8 million was apportioned by the Bureau of the Budget for execution of the fiscal year 1966 program, making these funds available for obligation during fiscal year 1966; $10.6 million was reserved for carryover and obligation in subsequent fiscal years.

Table 1 shows the planned application of the funds available for obligation in fiscal year 1966 and the actual obligations for specific budget activities. The OCD obligated $94.6 million, or 79 percent, of the $119.8 million available for obligation.

TABLE 1.—*Financial summary for fiscal year 1966*

[In thousands]

Budget activity	Funds available for obligation	Funds obligated
GRAND TOTAL	$119,775	$94,645
OPERATION AND MAINTENANCE, TOTAL	64,216	62,541
Warning and detection	5,803	5,473
Warning systems	683	648
Detection and monitoring systems	1,207	1,093
Warehousing and maintenance	3,913	3,732
Emergency operations	21,919	21,059
Emergency broadcast system	1,680	1,621
Damage assessment	1,386	1,384
Training and education	13,921	13,233
Emergency operations systems development	1,633	1,602
Public information	2,347	2,277
Other emergency operations	952	942
Financial assistance to States	23,958	23,865
Survival supplies, equipment and training	4,044	4,003
Emergency operating centers	4,485	4,448
Personnel and administrative expenses	15,429	15,414
Management	12,536	12,144
RESEARCH, SHELTER SURVEY AND MARKING, TOTAL	53,463	31,900
Shelters	41,958	[1] 21,631
Shelter survey and marking	16,720	9,020
Smaller structures	10,247	5,879
Shelter stocking	3,513	2,750
Shelter development	10,634	3,519
Improvement of shelters	844	463
Research and development	11,505	10,269
CONSTRUCTION OF FACILITIES, TOTAL	2,096	204

[1] Excludes an adjustment of $5,114,000 recovered from prior year obligations for shelter stocking.

Part III

NATIONWIDE FALLOUT SHELTER SYSTEM

The national shelter policy objective is to provide standard fallout shelter for the entire population at work, at home, or in school. This part of the report describes fiscal year 1966 progress in meeting this objective. It also covers planning, special techniques, and other activities designed to expand and strengthen the fallout shelter system in each community.

OPERATIONAL GAINS

Public fallout shelter space for nearly 14 million additional persons was located during fiscal year 1966. This increased the nationwide shelter inventory to almost 150 million spaces and exceeded the planned 6-million fiscal year objective by 8 million spaces, or 133 percent. Gains were also made in licensing, marking, and stocking public fallout shelters. At the end of the fiscal year, space had been licensed for more than 89 million persons, marked for more than 85 million, and stocked with survival supplies that would be sufficient to take care of more than 41 million persons for 14 days, or for 8 days for almost 69 million, the rated capacity of the facilities stocked. A summary of fiscal year 1966 progress is given in table 2.

These accomplishments are the results of a program started in September 1961. It includes (1) a continuing nationwide survey to locate public fallout shelter space in existing structures, (2) the marking

TABLE 2.—*Summary of progress in public fallout shelter program, fiscal year 1966*

Program action	Number of facilities (in thousands)				Number of spaces (in millions)			
	End of fiscal year 1965	End of fiscal year 1966	During fiscal year 1966		End of fiscal year 1965	End of fiscal year 1966	During fiscal year 1966	
	Total	Total	Gain	Percent gain	Total	Total	Gain	Percent gain
Located	155. 1	165. 8	10. 7	7	135. 6	149. 6	14. 0	10
Licensed	81. 8	93. 0	11. 2	14	77. 2	89. 3	12. 1	16
Marked	87. 9	95. 4	7. 5	9	75. 9	85. 3	9. 4	12
Stocked	63. 0	74. 7	11. 7	19	33. 8	41. 3	7. 5	22
Rated capacity of facilities stocked	------	------	------	------	56. 2	68. 8	12. 6	22

and licensing of acceptable shelter space for public use, and (3) the stocking of licensed shelters with survival supplies.

Survey Operations

Each public fallout shelter included in this program contains space for at least 50 persons and has a minimum protection factor (PF) of 40; i.e., radiation inside the shelter would be reduced to one-fortieth or less of that existing outside.

The nationwide shelter survey was continued during fiscal year 1966 mainly as an updating operation. It increased the nationwide shelter inventory by 10,775 facilities, with an aggregate capacity for nearly 14 million persons, and boosted the grand total to 165,839 facilities with an aggregate capacity for almost 150 million persons. (See tables 2 and 3.)

Sources of additional shelter space located by updating operations included new or modified construction and structures previously omitted from the survey because they were estimated to have marginal capacities or protection factors.

Supplemental information on shelters was also collected as part of the updating survey. This included data on the availability of trapped water for use by shelterees and cost estimates on the installation of wells, if needed and feasible, as a source of water. Data was collected on the capacity of sewage sanitation facilities available to shelters. A record was made of the number of telephone connections available for emergency communication with shelter occupants. The number of sanitation kits and radiological defense kits needed for individual shelters was also determined, and an estimate was made of the amount of food that normally would be available in the shelter. These data are needed to help local governments plan for the effective use of shelters under emergency conditions and can assist in alleviating storage problems by permitting a reduction in the number of water drums and other shelter supplies that need to be stocked.

During fiscal year 1966, updating operations were concentrated in active community shelter planing areas. (See *Community Shelter Planning* in part III.) Special shelter surveys and other techniques were also used to help locate additional shelter space where needed. (See *Expansion Techniques* in part III.) Results of survey operations were made available to State and local planning officials to help them provide fallout protection for the people in each locality.

Licensing and Marking Operations

Licensing.—During fiscal year 1966, local governments and property owners signed *Fallout Shelter License or Privilege* forms for 11,243 facilities with an aggregate capacity for more than 12 million persons. This increased the grand total to 93,032 licensed facilities, with an ag-

gregate capacity for more than 89 million persons. (See tables 2 and 3.)

The OCD requires that local government officials and property owners sign a shelter license for each public fallout shelter facility before stocking it with survival supplies. Local governments are responsible for obtaining these licenses, but upon request of local civil defense officials, survey personnel (see *Department of Defense Resources* in part II) continued to perform this task during fiscal year 1966. No monetary payment is made to or by the owner of the shelter facility, and he may revoke the license by sending a 90-day notice by registered mail to his local government as well as to the Federal Government.

The license authorizes temporary access by the public to specified shelter space in emergencies (during and after actual or impending attack), placement and maintenance of shelter signs, storage of shelter provisions in the facility, and inspection by Federal and local government officials. It also makes the local government responsible for care and maintenance of the shelter provisions and, except for willful damage or bad faith, exempts the owner from these responsibilities.

Marking.—More than 7,500 facilities, with an aggregate capacity for more than 9 million persons, were marked with interior and exterior standard fallout shelter signs during fiscal year 1966. This increased the grand total to 95,419 marked facilities, with an aggregate capacity for more than 85 million persons. (See table 2.)

The OCD continued to furnish the standard fallout shelter signs. Posting of these signs is primarily the responsibility of State and local governments. But upon request of local governments, shelter survey personnel continued to assist in performing this task and, when practicable, also helped in shelter sign maintenance when facilities were revisited for survey updating. About 58,000 shelter signs were posted during fiscal year 1966, making an approximate total of 153,000 exterior and 520,000 interior signs in use.

Stocking Operations

Survival supplies were issued to 11,626 shelter facilities during fiscal year 1966, increasing the grand total of stocked facilities to 74,667. The survival supplies issued during the fiscal year would be sufficient to take care of more than 12.5 million persons for 8 days or almost 7.5 million for 14 days. At the end of the fiscal year, the cumulative quantity of survival supplies placed in stocked facilities would be sufficient to take care of their rated capacity of 68.8 million persons for 8 days or 41.3 million for 14 days. (See tables 2 and 3.) In addition, 9,742 shelters were furnished with at least one radiation kit, increasing the total number so equipped to more than 77,300.

245-764 O—67——3

An OCD objective is to assure that survival supplies available to each licensed public fallout shelter would be sufficient to take care of shelterees for a 14-day period. The number of shelterees in each case is the rated capacity of the shelter; i.e., the number of persons for whom the shelter is capable of providing protected space, as determined by the survey. Shelterees in many places would have access to water, food, and medical supplies normally available in buildings where shelters are located. These and other survival assets, such as sewage sanitation facilities, are important in determining the amount and kind of supplies issued to each shelter.

Many public fallout shelters have been stocked for 100 percent of their rated shelteree capacity. For various reasons, other shelters have been stocked for less than their rated capacity. The aggregate shelter space stocked during fiscal year 1966 averaged 60 percent of the total rated shelteree capacity of the facilities stocked.

Survival supplies.—Survival supplies placed in licensed public fallout shelters are food, sanitation, and medical supplies, water storage containers, and radiation detection equipment. These supplies, described in appendix 1, were developed, selected, and procured by the Federal Government. An important qualification considered in their selection was that they remain usable after long periods of storage. They are deemed austerely adequate to take care of normally healthy persons while in shelters and to enable them to resume productive activities upon emergence.

Ventilation equipment, in the form of a packaged ventilation kit, was procured in limited quantity for the first time during fiscal year 1966. (See app. 1 and *Shelter Ventilation* in part III.)

Status of operations.—Food, sanitation kits, and medical kits procured and delivered to Federal warehouses since inception of the program in fiscal year 1962 would be sufficient to take care of 63 million shelterees for 2 weeks; water containers were procured for only 50 million, since trapped water is available in many shelters for emergency use. No additional procurement of general shelter supplies was initiated during fiscal years 1965 and 1966 because of lack of funds. About 12 percent of these supplies were placed in shelters during fiscal year 1966; 54 percent were placed in shelters in prior years and, at the end of fiscal year 1966, the remaining 34 percent, for use in filling requisitions, were at warehouses. (See fig. 5.) Radiological kits were also procured and had been furnished to more than 77,300 shelters by the end of fiscal year 1966. During fiscal year 1966, the average cost of shelter stocking to the Federal Government, including associated warehousing and transportation, continued to be approximately $2.43 per shelter space.

During fiscal year 1966, procurement of 2,400 packaged ventilation kits was initiated at a cost of $436,000. At the end of the fiscal year,

245-764 O - 67 (Page p. 26)

An OCD objective is to assure that survival supplies available to each licensed public fallout shelter would be sufficient to take care of shelterees for a 14-day period. The number of shelterees in each case is the rated capacity of the shelter; i.e., the number of persons for whom the shelter is capable of providing protected space, as determined by the survey. Shelterees in many places would have access to water, food, and medical supplies normally available in buildings where shelters are located. These and other survival assets, such as sewage sanitation facilities, are important in determining the amount and kind of supplies issued to each shelter.

Many public fallout shelters have been stocked for 100 percent of their rated shelteree capacity. For various reasons, other shelters have been stocked for less than their rated capacity. The aggregate shelter space stocked during fiscal year 1966 averaged 60 percent of the total rated shelteree capacity of the facilities stocked.

Survival supplies.—Survival supplies placed in licensed public fallout shelters are food, sanitation, and medical supplies, water storage containers, and radiation detection equipment. These supplies, described in appendix 1, were developed, selected, and procured by the Federal Government. An important qualification considered in their selection was that they remain usable after long periods of storage. They are deemed austerely adequate to take care of normally healthy persons while in shelters and to enable them to resume productive activities upon emergence.

Ventilation equipment, in the form of a packaged ventilation kit, was procured in limited quantity for the first time during fiscal year 1966. (See app. 1 and *Shelter Ventilation* in part III.)

Status of operations.—Food, sanitation kits, and medical kits procured and delivered to Federal warehouses since inception of the program in fiscal year 1962 would be sufficient to take care of 63 million shelterees for 2 weeks; water containers were procured for only 50 million, since trapped water is available in many shelters for emergency use. No additional procurement of general shelter supplies was initiated during fiscal years 1965 and 1966 because of lack of funds. About 12 percent of these supplies were placed in shelters during fiscal year 1966; 54 percent were placed in shelters in prior years and, at the end of fiscal year 1966, the remaining 34 percent, for use in filling requisitions, were at warehouses. (See fig. 5.) Radiological kits were also procured and had been furnished to more than 77,300 shelters by the end of fiscal year 1966. During fiscal year 1966, the average cost of shelter stocking to the Federal Government, including associated warehousing and transportation, continued to be approximately $2.43 per shelter space.

During fiscal year 1966, procurement of 2,400 packaged ventilation kits was initiated at a cost of $436,000. At the end of the fiscal year,

245-764 O - 67 (Face p. 26)

TABLE 3 --FALLOUT SHELTER LOCATED, LICENSED, AND STOCKED FISCAL YEAR (FY) 1966 1/

(Protection factor of 40 or higher, 50 or more spaces per facility)

AREA	LOCATED				LICENSED				STOCKED (with general supplies)			
	Facilities		Spaces (000) 2/		Facilities		Spaces (000) 2/		Facilities		Spaces (000) 2/	
											Rated Capacity	
	During FY 1966	Cumulative, end of FY 1966	During FY 1966	Cumulative, end of FY 1966	During FY 1966	Cumulative, end of FY 1966	During FY 1966	Cumulative end of FY 1966	During FY 1966	Cumulative, end of FY 1966	During FY 1966	Cumulative, end of FY 1966
TOTAL	10,775	165,839	13,984	149,624	11,243	93,032	12,049	89,268	11,626	74,667	12,534	68,782
REGION 1	2,709	61,589	4,283	49,827	4,521	29,487	4,293	26,185	5,343	22,825	4,972	18,697
Connecticut	95	2,914	41	2,220	118	1,847	67	1,632	147	1,583	52	1,234
Maine	147	649	54	311	78	439	74	255	27	364	29	195
Massachusetts	733	6,623	1,029	5,077	261	3,400	428	2,632	278	2,410	459	1,882
New Hampshire	45	460	18	208	1	295	5	144	31	283	11	139
New Jersey	443	7,878	705	6,218	570	3,904	620	3,548	354	2,661	496	2,663
New York	1,071	40,657	2,372	34,344	3,279	18,080	2,989	17,032	4,242	14,437	3,819	11,889
Rhode Island	156	688	68	577	111	508	52	417	60	376	61	354
Vermont	19	323	5	138	27	253	4	115	44	236	11	113
Puerto Rico	0	1,382	-7	733	76	748	52	406	160	462	33	224
Virgin Islands	0	15	0	2	0	13	0	2	0	13	0	2
REGION 2	3,595	32,175	2,998	29,583	2,177	18,134	1,918	18,234	1,866	13,784	2,198	14,525
Delaware	104	623	88	332	79	420	76	271	49	386	60	208
Dist. of Columbia	608	3,027	536	3,824	24	1,131	124	2,444	72	1,058	297	2,177
Kentucky	28	1,678	39	1,991	60	1,057	46	1,213	53	947	33	1,021
Maryland	162	2,394	27	2,183	184	1,689	123	1,531	164	1,357	218	1,197
Ohio	213	7,168	144	6,270	284	4,180	141	3,401	413	2,989	244	2,421
Pennsylvania	1,781	12,910	1,704	11,712	1,249	7,305	1,148	7,287	935	5,312	1,156	5,872
Virginia	642	3,503	434	2,748	260	1,762	246	1,727	156	1,242	180	1,337
West Virginia	57	872	26	524	37	590	13	360	24	493	10	292
REGION 3	1,185	10,923	1,151	11,060	1,075	7,493	935	7,594	724	6,408	786	6,545
Alabama	160	1,846	82	1,319	113	1,343	42	982	71	1,182	73	931
Florida	162	1,861	251	2,494	140	1,096	225	1,526	81	879	112	1,244
Georgia	457	1,951	475	2,912	279	1,436	312	2,219	164	1,162	312	1,849
Mississippi	71	540	28	380	56	456	21	337	61	417	26	324
North Carolina	223	1,955	123	1,463	218	1,367	199	1,128	105	1,174	131	945
South Carolina	-7	696	59	538	43	463	53	371	15	380	19	291
Tennessee	119	1,876	133	1,883	223	1,254	84	982	227	1,136	114	912
Canal Zone	0	198	0	71	3	78	0	49	0	78	0	49
REGION 4	915	22,694	1,961	22,981	978	13,874	1,787	13,755	1,407	11,813	1,730	9,746
Illinois	82	7,809	-159	10,158	157	4,405	51	5,368	625	3,211	306	2,624
Indiana	16	2,763	-52	2,169	105	1,608	90	1,378	136	1,419	78	1,183
Michigan	629	4,774	1,416	4,979	264	2,785	835	3,087	203	2,399	775	2,572
Minnesota	181	3,413	730	2,899	207	2,455	657	2,183	204	2,360	442	1,817
Wisconsin	7	3,935	26	2,775	245	2,621	155	1,740	239	2,424	129	1,550
REGION 5	422	8,117	745	8,691	518	6,152	706	6,220	455	5,347	707	5,156
Arkansas	7	1,432	-68	822	10	1,180	-76	679	40	1,087	115	630
Louisiana	44	882	43	1,237	89	619	99	800	72	507	34	661
New Mexico	93	525	64	306	73	450	74	264	64	413	56	208
Oklahoma	70	1,485	146	1,259	94	1,273	128	1,032	156	1,247	137	942
Texas	208	3,793	560	5,066	252	2,630	481	3,445	123	2,093	366	2,716
REGION 6	1,221	15,109	844	10,490	1,099	9,324	735	6,656	1,042	7,245	736	5,675
Colorado	200	1,652	135	1,485	209	1,016	229	939	192	869	226	837
Iowa	57	2,212	11	1,283	141	1,509	40	863	134	1,215	46	712
Kansas	315	2,717	158	1,657	152	1,726	104	1,219	194	1,337	144	1,054
Missouri	119	4,147	298	4,357	102	2,062	177	2,428	65	1,505	170	2,020
Nebraska	364	2,748	187	974	249	1,715	101	606	114	1,150	53	504
North Dakota	19	591	10	258	71	458	34	225	152	411	50	204
South Dakota	62	666	20	300	74	568	21	255	83	507	17	237
Wyoming	85	376	25	176	101	270	28	121	108	251	29	107
REGION 7	552	10,415	1,832	13,155	518	5,063	1,403	7,823	425	4,181	1,138	6,120
Arizona	138	555	178	516	43	312	88	287	31	275	55	242
California	300	7,151	1,564	11,329	310	3,645	1,278	6,775	239	2,909	1,020	5,241
Hawaii	59	481	48	342	35	257	8	206	11	203	3	170
Nevada	-3	267	-2	226	7	176	8	165	14	162	20	148
Utah	58	1,939	45	734	119	668	20	388	129	628	40	318
American Samoa	0	2	0	3/	0	1	0	3/	0	0	0	0
Guam	0	20	0	8	4	4	1	1	1	4	3/	1
REGION 8	176	4,817	170	3,837	357	3,505	272	2,801	364	3,064	267	2,318
Alaska	14	252	7	113	10	182	18	86	8	182	16	85
Idaho	13	397	11	184	35	331	17	151	30	312	16	145
Montana	15	662	54	333	47	510	71	263	63	493	70	258
Oregon	46	1,372	13	1,203	103	849	40	791	110	604	51	444
Washington	88	2,134	85	2,004	162	1,633	126	1,510	153	1,473	114	1,386

AREA	STOCKED (with general supplies)			
	Spaces (000) 2/			
	Stocked Capacity			
	During FY 1966	Cumulative end of FY 1966	During FY 1966	Cumulative end of FY 1966
TOTAL	7,480	41,294	2,829	10,845
REGION 1	1,016	7,458	636	4,554
Connecticut	49	900	21	157
Maine	21	157	16	121
Massachusetts	194	1,193	49	338
New Hampshire	16	121	16	121
New Jersey	238	1,342	129	773
New York	2,229	6,658	322	970
Rhode Island	26	219	66	322
Vermont	22	86	95	700
Puerto Rico	34	167	13	230
Virgin Islands	0	2	115	778
REGION 2	1,016	7,458	636	4,554
Delaware	16	101	83	742
Dist. of Columbia	62	631	129	773
Kentucky	25	835	135	970
Maryland	141	728	66	322
Ohio	199	1,610	95	700
Pennsylvania	490	2,572	13	230
West Virginia	74	715	115	778
REGION 3	8	266	0	38
Alabama	636	4,554	529	1,647
Florida	83	742	94	950
Georgia	129	773	152	1,263
Mississippi	135	970	217	1,269
North Carolina	66	322	123	1,137
South Carolina	95	700	497	3,500
Tennessee	13	230	15	410
Canal Zone	115	778	1,114	6,265
REGION 4	529	1,647	94	950
Illinois	94	950	152	1,263
Indiana	152	1,263	217	1,269
Michigan	217	1,269	123	1,137
Minnesota	123	1,137	497	3,500
Wisconsin	497	3,500	15	410
REGION 5	15	410	1,114	6,265
Arkansas	34	437	529	1,647
Louisiana	56	160	94	950
New Mexico	208	35	152	1,263
Oklahoma	35	529	217	1,269
Texas	109	620	123	1,137
REGION 6	89	932	497	3,500
Colorado	60	365	15	410
Iowa	75	176	1,114	6,265
Kansas	36	205	529	1,647
Missouri	36	96	94	950
Nebraska	394	3,269	152	1,263
North Dakota	55	203	217	1,269
South Dakota	280	2,579	123	1,137
Wyoming	1	96	497	3,500
REGION 7	22	139	15	410
Arizona	37	252	1,114	6,265
California	0	0	529	1,647
Hawaii	3/	1	94	950
Nevada	2,318	1,809	152	1,263
Utah	338	78	217	1,269
American Samoa	15	134	123	1,137
Guam	24	205	497	3,500
REGION 8	45	392	15	410
Alaska	62	160	1,114	6,265
Idaho	35	760	529	1,647
Montana	161	1,733	94	950
Oregon	251	3,593	152	1,263
Washington	216	670	217	1,269
	35	529	123	1,137
	109	620	497	3,500
	89	932	15	410
	60	365	1,114	6,265
	75	176	529	1,647
	36	205	94	950
	36	96	152	1,263
	394	3,269	217	1,269
	55	203	123	1,137
	280	2,579	497	3,500
	1	96	15	410
	22	139	1,114	6,265
	37	252	529	1,647
	0	0	94	950
	3/	1	152	1,263
	338	1,809	217	1,269
	15	78	123	1,137
	24	134	497	3,500
	45	205	15	410
	62	392	1,114	6,265
	191	999	529	1,647

1/Data contained in this table are net; in some areas activity during the year may be negative because decreases due to demolition of buildings, recomputation of original capacity, etc., may outweigh increases due to new construction, etc.

2/Figures may not add to exact totals, due to rounding.

3/Less than 500.

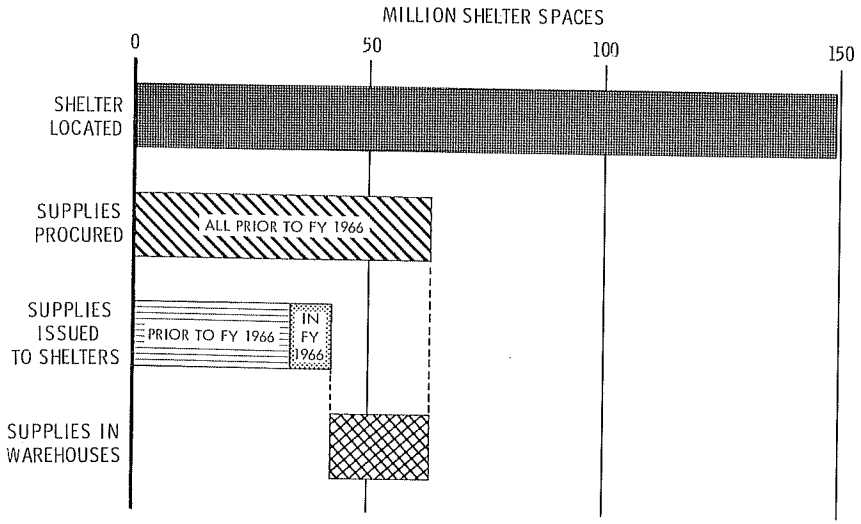


Figure 5.—Summary of shelter stocking operations, end of fiscal year 1966.

2,082 of these kits had been delivered to warehouses for distribution to selected fallout shelters in community shelter planning areas. (See *Shelter Ventilation* in part III.)

Operational procedures.—Except for procurement of 2,400 packaged ventilation kits for the OCD by the Defense Supply Agency (DSA), fiscal year 1966 operations primarily concerned the distribution of supplies from warehouses to public fallout shelters. All supplies were distributed through Department of Defense (DOD) and General Services Administration (GSA) warehouse facilities. The Defense General Supply Center (DGSC) at Richmond, Va., a field facility of the DSA, continued to serve as the National Inventory Control Point for the distribution of shelter supplies.

At the end of fiscal year 1966, 29 DOD and 15 GSA warehouses served as distribution points to local governments. For economic and other reasons, operations at 15 other warehouses were terminated during the year and their missions assigned to warehouses that remained operational. This reduced the overhead warehouse cost but increased somewhat the transportation cost of delivering supplies to shelters. Local governments affected by these changes usually benefited since the greater distance (see discussion of delivery financing in a following paragraph) from the warehouse frequently resulted in delivery of supplies at Federal expense.

The series of actions that result in actual stocking of a specific shelter begin when the owner and local government official sign the shelter license agreement. Based upon this shelter license data, a preprinted requisition for shelter supplies is sent by the DGSC to the local government. When local officials sign and return the requisition, the

DGSC sends a shipping document to the appropriate warehouse and the local government. The supplies are then issued by the warehouse as soon as practicable.

The Federal Government pays for transportation of supplies to local central delivery points, or to shelters being stocked for more than 1,000 persons if more than 50 percent of the population of the county are more than 25 air-miles from the warehouse. If lesser distances are involved, local governments provide transportation for pickup and delivery of shelter supplies. Local governments are responsible for placing the supplies in shelters and for future care, inspection, and maintenance of these supplies.

During fiscal year 1966, plans were started for designing a scientific means of sampling the condition of shelter supplies by inspection. As indicated by available data, shelter supplies placed in public fallout shelters have remained significantly secure. At the end of fiscal year 1966, requisitions for and issuance of replacements for losses amounted to less than two-tenths of 1 percent of the total value of all shelter supplies issued since the beginning of the program in fiscal year 1962. This included replacements necessitated by losses from theft, fire, natural disaster, and all other causes. Reported losses caused by theft and vandalism amounted to only three-hundredths of 1 percent.

COMMUNITY SHELTER PLANNING

Community shelter planning is a key aspect of the nationwide fallout shelter system, and the Community Shelter Plan (CSP) is the foundation of local emergency readiness. Objectives of community shelter planning are to:

1. Match the people in the CSP area to the best protected space currently available, so that available fallout protection is used with maximum effectiveness.
2. Provide a realistic movement plan that will allow the most efficient use of available fallout protection.
3. Insure that all of the people know where to go and what to do in case of nuclear attack.
4. Define precisely areas with unfilled requirements for standard fallout shelters, so that efforts to develop new shelter are applied to them.
5. Provide for updating shelter allocation plans as the population distribution and the shelter inventory change.
6. Provide a basis for updating local civil defense plans so that State and local governments and their forces and nongovernmental organizations, plus any military support forces which can be made available, will be ready to support the shelter-based local civil defense system.

The primary aim is to produce a workable and practical plan for the use of the best protection available in each community, a plan which—because it is workable and practical—makes sense to the citizenry and their elected representatives and is credible to them. A secondary aim is to base local emergency operating plans upon the use of shelter to meet local unfilled standard shelter requirements defined in developing the CSP.

During fiscal year 1966, the OCD established a national community shelter planning program designed to assist each community in the United States in developing a CSP. The principal nature of this assistance is the use of Federal funds to provide all communities with professional urban planning services. For large local planning areas, this service is financed directly with Federal funds in accordance with contractual arrangements for employment of local urban planners or professioinal urban planning firms. Administered for the OCD by the U.S. Army Corps of Engineers, the contracts are signed by district representatives of that organization or of the U.S. Naval Facilities Engineering Command, and representatives of the planning area. For small local planning areas, the service is furnished by a State community shelter planning officer whose employment is financed by a contract between the OCD and the State.

Large local planning areas financed directly by the OCD are identified by the State community shelter planning officer with the help of State and OCD regional civil defense personnel. The remaining part of the State is covered by small local planning areas. Guidance materials on selecting the planning areas and for administering and conducting the program were published in the *Federal Civil Defense Guide*, December 1965:

Community Shelter Planning, part D, chapter 3
National Community Shelter Planning Program, part D, chapter 3, appendix 1
Urban Planner's Manual for Preparing a Community Shelter Plan, part D, chapter 3, appendix 2
Instructions for Preparing a Community Shelter Plan in Smaller Communities, part D, chapter 3, appendix 3

By the end of fiscal year 1966, substantial progress had been made towards attaining nationwide community coverage by CSP contracts. Contracts covering 28 large local planning areas located in 21 States had been executed and 15 were being processed; an additional 125 planning areas had formally indicated an interest in negotiating contracts. Funds obligated for local CSP contracts totaled nearly $1.4 million.

Contracts covering small CSP areas had been executed with 31 States at the end of the fiscal year, and contracts with 15 States and

the District of Columbia were being processed. Funds obligated for State contracts totaled more than $760,000.

Updating of the nationwide fallout shelter inventory (see *Survey Operations* in a preceding section) and use of techniques for expanding the fallout shelter system or locating additional fallout protection (see *Expansion Techniques* in the following section) are coordinated with work in CSP areas. For example, the first packaged ventilation kits were scheduled for the 57 communities with CSP projects, and the Small Structures Survey also gave priority to these planning areas.

EXPANSION TECHNIQUES

Several techniques were used to locate or develop additional protective space in areas with unfilled requirements for standard fallout shelters. These included the incorporation of fallout shelter design techniques in new construction at little or no additional cost, special surveys to locate fallout protection in homes and small buildings, and the provision of ventilation to increase the capacity of public fallout shelters already located.

Design Techniques

Since the development of "slanting" techniques in fiscal year 1964, information on these techniques for incorporating radioactive fallout protection features into building designs has been widely disseminated among architects and engineers. (See *Professional Support of Architects and Engineers* in part III.) These techniques enhance the fallout protection inherent in new construction with little or no increase in cost and without adversely affecting the appearance of the building or its intended use. During fiscal year 1966, the OCD continued to provide professional advisory services on the use of slanting to architects and engineers.

Federal buildings.—An OCD objective is to develop slanting for fallout radiation protection as a normal practice in the design of all Federal construction. Professional consulting services for this purpose are made available to Federal agencies responsible for the design and construction of new buildings. These services include a review of requirements, including architectural designs, to determine need for fallout protection in a proposed location, the feasibility of providing it economically, and the adequacy of funds requested for it.

Case studies are also made to show the greatest amount of protection obtainable without additional cost and to provide cost estimates for incorporating protective features meeting OCD criteria. The professional advisory service relies upon the use of automatic data processing for analysis of building designs. This makes rapid identifica-

tion and integration of desired protective features possible in the early stages of design development. Cost-index curves as well as data tables are made available for estimating the cost of these features.

Fiscal year 1966 appropriations authorized the incorporation of fallout protection in 19 specific Federal buildings: 16 for the General Services Administration, 2 for the Department of the Interior, and 1 for the Department of Agriculture. These buildings, as well as 16 Federal buildings for which similar appropriations were authorized for fiscal year 1965, were included in those covered by OCD advisory service on slanting techniques.

Non-Federal buildings.—Upon request of State and local civil defense officials, the OCD provides the services of qualified shelter analysts to local architectural and consulting engineering firms on the use of slanting in designing new buildings, or remodeling or expanding existing buildings. This excludes actual analysis and design services, but guidance and advice are offered on how firms can achieve fallout protection through their own efforts. The service is provided through seminars, by recommendations based on review of design plans, or by personal consultation.

During fiscal year 1966, about 30 certified shelter analysts performed this service for the OCD under contractual arrangements, as needed, in 217 cases. This increased to nearly 280 the number so helped since this service was started in fiscal year 1965. These analysts are associated with architectural or engineering schools and departments of universities and colleges or with well established architectural or engineering firms throughout the Nation.

As a result of the growing demand for this service, plans were made during fiscal year 1966 to make it available through the facilities of selected universities and colleges. By the end of the year, 43 of them had been asked to submit contract proposals for this purpose.

Small Structures Survey

The Small Structures Survey (SSS) operations were limited to community shelter planning areas having unfilled requirements for standard fallout shelters. Begun during fiscal year 1965, the primary purpose of the SSS is to locate acceptable shelter space in buildings too small to meet the 50-person-capacity minium requirement of the regular nationwide survey. During fiscal year 1966, SSS operations were completed in the 57 areas that had community shelter planning projects underway before the CSP program was announced in fiscal year 1966.

These operations located additional fallout shelter space with a protection factor of 40 or more for 412,360 persons. Of this amount,

187,532 spaces were in facilities having a capacity for at least 10 but less than 50 shelterees. The other 224,828 spaces were in facilities of greater capacity and were added to the regular public fallout shelter inventory. As anticipated, the SSS operations added to the regular inventory many facilities that had originally been estimated to have marginal capacities.

SSS operations were also extended to community shelter planning areas covered by fiscal year 1966 CSP contracts. Although OCD plans do not call for licensing and stocking fallout shelters of less than 50-person capacity, identifying and locating them will provide local governments with additional fallout shelter space for allocation where needed in the CSP.

Before beginning the SSS operations in fiscal year 1965, operation of the regular nationwide shelter survey had incidentally located shelter space for more than 2 million persons in facilities too small to meet the 50-person-minimum capacity requirements. This shelter space will become part of the SSS inventory and can also be used wherever available and needed.

Home Fallout Protection Survey

During the latter half of fiscal year 1966, a Home Fallout Protection Survey (HFPS) was conducted in Rhode Island. (See fig. 6.) At the end of the year, about 73 percent of approximately 223,000 home occupants had returned questionnaires giving data as requested for analysis. The results revealed that about 22,000 basements with a protection factor (PF) of 40 or higher contained shelter space for about 84,000 home occupants, and about 110,000 basements with PF 20 to PF 40 contained shelter for about 400,000 occupants.

At the end of fiscal year 1966, similar surveys were planned for other States, especially those with a high percentage of home basements. The results of the HFPS of Rhode Island and of a sample survey conducted in fiscal year 1965 have confirmed that many home occupants in areas with unfilled requirements for standard fallout shelters can use their home basements for fallout protection. In other areas, persons with fallout protection identified in their homes would have a choice of taking shelter there or going to a public shelter.

Home occupants covered by the survey were informed of the fallout protection available in their basements and how they could improve it, if necessary. Householders without basements were sent the OCD manual *Personal and Family Survival*, SM 3–11. This publication includes information on constructing home fallout shelters and improvising fallout protection by home occupants to whom public fallout shelters may not be accessible.

Military Construction

The Military Construction Authorization Act of 1966 (Public Law 89–188) made provisions for including fallout protection in military construction. Section 608 of the Act states:

> (a) All construction under this Act shall be designed using techniques developed by the Office of Civil Defense to maximize fallout protection, where such can be done without impairing the purpose for which the construction is authorized or the effectiveness of the structure, unless exempted from this requirement under regulations prescribed by the Secretary of Defense or his designee.
>
> (b) The Secretary of Defense shall make appropriate provision for the utilization of technical design and construction methods in the preparation of design and construction plans and in construction under this Act, to assure carrying out the purposes of this section; and for such purposes expenditures on individual projects shall not exceed one per centum of the amount authorized for that project.

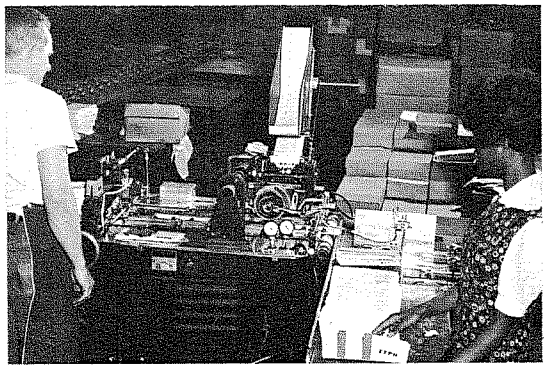
A Department of Defense directive issued on June 20, 1966 (see app. 2), provided uniform guidance on objectives, policies, and criteria for determining the nature of fallout shelter requirements, and for developing fallout shelter plans at all Department of Defense installations.

During fiscal year 1966, the OCD conducted 1-week shelter analysis courses for military personnel at U.S. overseas military installations in West Germany, Korea, and Okinawa. This was done at the request of the Army Deputy Chief of Staff for Military Operations and was a continuation of the Military Overseas Shelter Survey (MOSS) started during fiscal year 1965.

Shelter Ventilation

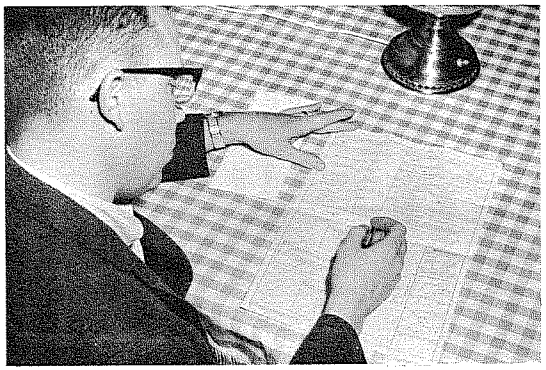
During fiscal year 1966, the OCD initiated a prototype system for procurement and distribution of 2,400 packaged ventilation kits. Most of the kits had been delivered to Government warehouses at the end of the fiscal year and will be distributed to selected public fallout shelters in community shelter planning areas having unfilled requirements for standard shelter.

A survey of certain shelter facilities in the 57 community shelter planning areas was conducted to determine the most effective placement of the kits. During fiscal year 1966, more than 1,200 facilities were surveyed for this purpose. In future survey or resurvey of facilities, ventilation data will be part of the standard information collected. Fallout shelter space can be obtained economically for many additional people by providing packaged ventilation kits for use in inadequately ventilated public shelters. (See fig. 7 and app. 1.)

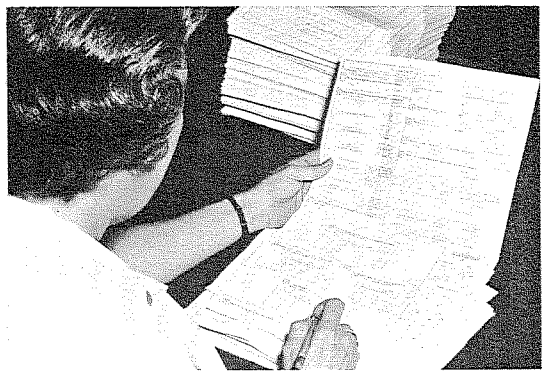


A. Addressing questionnaires to R. I. residents.

B. Residents collecting data.



C. Writing data on questionnaire.

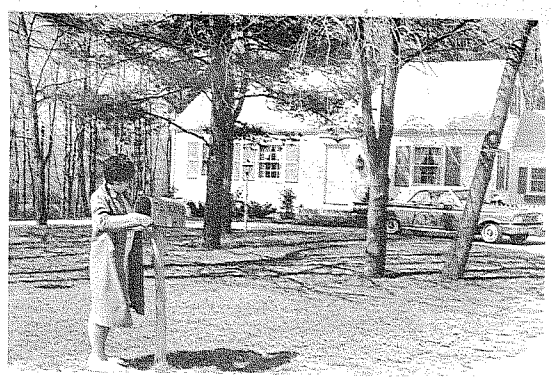


D. Census Bureau employee checking data furnished by resident.

C. Writing data on questionnaire.

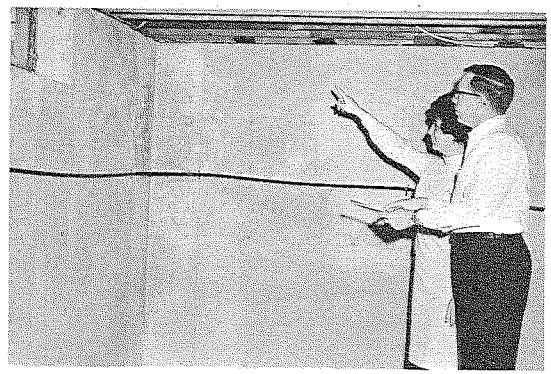
D. Census Bureau employee checking data furnished by resident.

E. Analyzing data by electronic computer.



F. Resident receiving results of analysis.

G. Discussing results and imformation on home fallout protection.



H. Inspecting basement corner with best fallout protection.

Figure 6. --Scenes relating to the fallout protection survey of a North Scituate, R. I., home.

PROTECTIVE STRUCTURES

Equally important to protecting the public from radioactive fallout is the need to protect people responsible for warning the public and carrying on emergency communications or directing and controlling civil defense emergency operations. Protection of these people is critical to effective use and operation of the nationwide fallout shelter system.

Protection of warning points.—In fiscal year 1964, the OCD began to provide financial assistance to State and local governments, as necessary, for furnishing warning points with fallout protection, emergency power generators, and ventilating equipment. Requirements included a minimum fallout protection factor of 100 and equipment capable of comprehensive operation in the National Warning System under initial and subsequent attack conditions.

During fiscal year 1966, this operation was limited to warning points for which agreements had been signed before the end of fiscal year 1965. By June 30, 1966, agreements in effect covered 235 warning points; fallout construction and installation of equipment had been completed for 146 of these points. In addition to the 235 warning points covered by funding agreements, OCD requirements for 22 warning points had been met without use of Federal funds. Cost of this operation during fiscal year 1966 was about $67,000.

Instead of expanding this operation further during fiscal year 1966, extensions or alternate warning points and duplicate NAWAS equipment were installed in many local emergency operating centers that provide fallout protection. (See *Federal Warning Systems* in part IV.)

Protection of radio stations.—Construction of fallout protection for 151 radio stations was completed in fiscal year 1966 with OCD financial assistance. This increased to 361 the number of stations provided this protection by means of Federal funds. In addition, nine stations either already had fallout protection or acquired it without the use of Federal funds.

These arrangements are made to provide for continuous operation of selected radio stations under fallout conditions that may exist after nuclear attack. Their operation would be necessary for disseminating information to the public and to conduct emergency operations. Since commercial stations are not normally equipped to operate under these conditions, they are provided Federal funds for this purpose. Participants are required to agree to provide and maintain fallout protection and emergency power equipment in their installations as well as special communication links to local emergency operating centers. (See *Emergency Broadcast System* in part IV.) Cost of this operation in fiscal year 1966 was approximately $1.4 million.

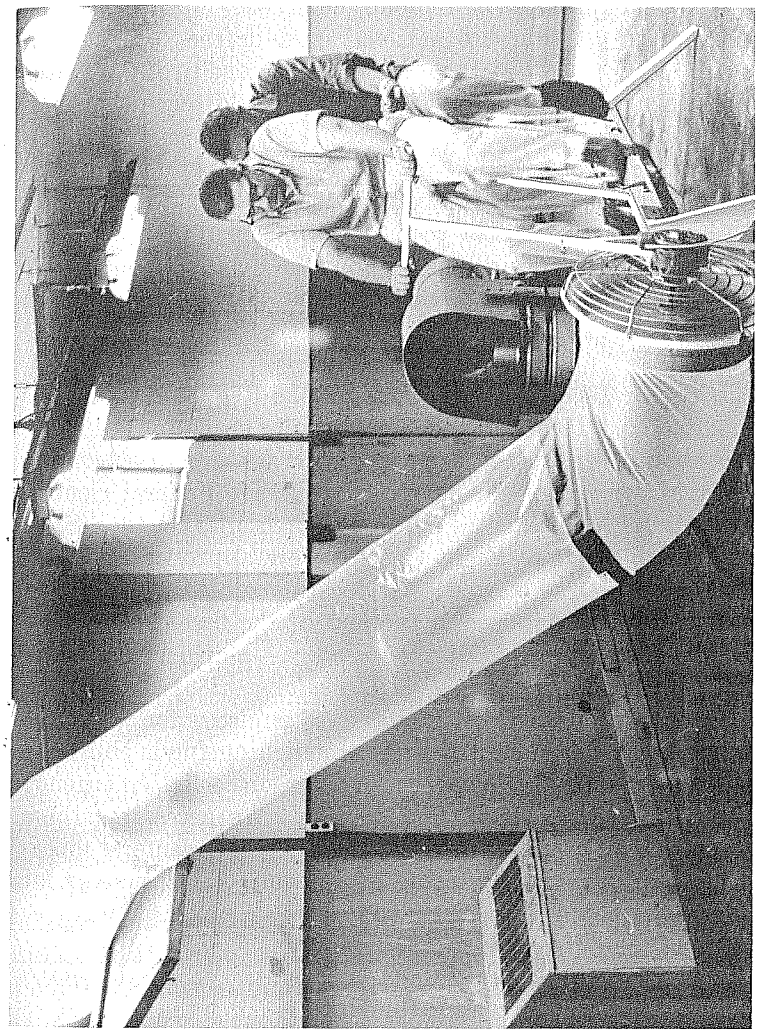


Figure 7.—Demonstration of type II packaged ventilation kit in operation. The air discharge assembly, with the duct adapter, operates through the window as fresh air enters through distant openings. In actual use, the fan should be as far from the fresh air inlets as possible.

OCD regional operating centers.—Each OCD regional office is an operating center at the Federal level and would be the site of civil defense emergency operations in case of nuclear attack. The Region Five Center, Denton, Tex., has been operational at a permanent protected site since February 1964. It houses the peacetime operational staff of the OCD and the Office of Emergency Planning. In wartime it would be the headquarters for regional emergency operations and would also serve as an alternate national civil defense operational headquarters. OCD plans are to provide permanent protected sites for all of its other regional offices which then would serve the same purposes as the Region Five Center.

Funds available for construction of OCD regional operating centers total approximately $9.9 million: about $2.1 million from fiscal year 1962 and $7.8 million from fiscal year 1966 appropriations. By the end of fiscal year 1966, the design for Region One Center, to be located near Harvard, Mass., had almost been completed. Where sites permit, this design will be used as a prototype for construction of other OCD regional centers.

During fiscal year 1966, a design study for the Region Two Center was being conducted. It will include provision of space for the OCD computer operation. In Region Four a study was made to determine the feasibility of converting a small portion of the Federal Center, Battle Creek, Mich., for use as the site for the regional center. Sites for Regions Three, Six, and Eight Centers were approved and preliminary design work was started; the location of a Region Seven site was still under consideration at the end of the fiscal year.

State and local emergency operating centers.—During fiscal year 1966, the OCD prepared a *Manual for Development of Emergency Operating Centers*, MP–38, to provide standard guidance for State and local governments on this subject. Federal matching funds obligated during the year to assist them in establishing protected emergency operating centers totaled nearly $4.5 million. As necessary, these funds were used for designing and constructing new centers, modifying existing buildings, and acquiring equipment. Requirements for Federal assistance include 85 square feet of space per staff member and a protection factor of 100.

During fiscal year 1966 an additional 149 State and local centers were financed by Federal matching funds, increasing the number to 772; 387 of these have been completed. During fiscal year 1966, State and local governments reported an additional 493 centers that had been established without the use of Federal funds, increasing this number to 1,813, of which 1,679 had been completed. See table 4.

The net gain of State and local emergency operating centers reported was 642, or 33 percent, during fiscal year 1966. But even more signifi-

TABLE 4.—*Number of State and local emergency operating centers, end fiscal year 1966*

Type of center	Grand total	Completed			Being completed		
		Type of funding			Type of funding		
		Total	Federal matching	State and local [2]	Total	Federal matching	State and local [2]
Total	2, 585	2, 066	387	1, 679	519	385	134
State	68	43	31	12	25	22	3
State area	94	53	37	16	41	33	8
County	547	350	106	244	197	128	69
City	1, 427	1, 289	133	1, 156	138	110	28
Combined [1]	449	331	80	251	118	92	26

[1] City-county, etc.
[2] As reported to the OCD.

cant was the growing recognition, among State and local governments, of the need for these centers. This was well illustrated by the number of centers financed completely by State and local governments.

PROFESSIONAL SUPPORT OF ARCHITECTS AND ENGINEERS

In further developing the nationwide shelter system and the protective structures used in its support, the OCD continued to rely heavily upon the professional and technical assistance of architects and engineers.[1] Their cooperation and technical knowledge have made possible the continuing shelter survey, started in September 1961, and the development of slanting and other techniques that show promise of providing fallout protection to an ever increasing percentage of the population. (See *Expansion Techniques* in part III.) This section of the report summarizes major fiscal year 1966 activities and projects dedicated to the professional and technical support of architects and engineers.

Professional training.—As the result of 155 classes conducted in fallout shelter analysis during fiscal year 1966, nearly 2,000 architects and engineers were certified as fallout shelter analysts, increasing the number qualified to more than 11,000. The OCD keeps them informed by mail on new technical data as it becomes available, and their services are available nationwide. Their names are published in the *National Directory of Qualified Fallout Shelter Analysts*, FG–F–1.2. Firms employing them are listed in the *National Directory of Architectural, Engineering and Consulting Firms With Certified Fallout Shelter Analysts*, FG–F–1.3.

[1] See app. 3 and *Advisory Committee on Shelters* in part VII for information on Advisory Committee on the Design and Construction of Fallout Shelters.

The architectural and engineering schools and the departments of architecture and engineering of several universities and colleges throughout the country offered the course in fallout shelter analysis on a semester basis and through traveling instructor teams where the demand existed. It was taught at the U.S. Navy Civil Engineers Officers School and the U.S. Army Engineer School. For architects and engineers unable to attend regularly scheduled classes, the University of Wisconsin continued to offer the instruction by correspondence.

A course in protective construction was taught in 34 classes with an aggregate attendance of 460. This was an extension of the fallout shelter analysis course with special emphasis on the immediate effects of nuclear detonations on structures. Another course on unique problems of shelter environmental control engineering was taught in 24 classes attended by a total of 327 engineers. Work during fiscal year 1966 also included development of new courses for instruction in planning shelters and protective construction.

Special attention was given to keep certified fallout shelter analysts informed of the latest techniques in radiation shielding and OCD policies and plans. In October 1965, a 2-day seminar was held in Washington, D.C., for about 300 qualified instructors. They subsequently conducted eighty-four 2-day updating workshops attended by approximately 2,000 OCD certified shelter analysts throughout the country. In addition, about 200 achitects and engineers from the American Telephone and Telegraph Co. attended one of the five special workshops held to brief them on radiation shielding and slanting techniques.

University projects.—These projects were conducted through contractual arrangements with various universities and included:

1. *Architectural and engineering development centers.*—Established in fiscal year 1965, these centers completed their first full year of operation during fiscal year 1966. They are located at the Universities of Colorado, Florida, and Washington, and at Pennsylvania State University, Purdue University, San Jose State College, Texas Agricultural and Mechanical University, and Worcester Polytechnic Institute.

The program of each University Architectural and Engineering Development Center is an activity designed to integrate all the technical capabilities of the institution to serve civil defense requirements. These centers provide planners, architects, and engineers with information on the latest applicable techniques for providing protection from fallout. They are strategically located, so that each OCD region has one highly qualified institution that serves as the base for dissemination of civil defense technical information to practicing architects and engineers and to faculty and students in that area.

Considerable progress was also made in incorporating technical data and information into educational programs and activities as well as in identifying problems of shelter development that require new technical data for solution. For example, at the University of Florida Center, a comprehensive document on environmental control systems for fallout shelters was prepared. It will be developed as a textbook for use in teaching fallout shelter analysis. At the Worcester Polytechnic Institute Center material on fallout radiation shielding of structures was developed for similar use.

2. *Student fellowships.*—During fiscal year 1966, the OCD, in cooperation with the American Society for Engineering Education, announced the establishment of graduate student fellowships for study of radiation shielding and architectural designs related to radiation protection. All students awarded these fellowships will study under the direction of faculty members certified by the OCD as instructors in fallout shelter analysis. The fellowships are designed to stimulate the interest of outstanding graduate students and to encourage them to specialize in studies of interest to civil defense, with the result that civil defense research will become a part of their professional careers.

3. *Faculty development.*—A total of 116 faculty members from 40 architectural and engineering schools participated in faculty development activities during fiscal year 1966. This increased to 150 the net number of institutions eligible to conduct fallout shelter analysis and design courses and to 381 the number of qualified instructors at these institutions.

Summer institutes on nuclear defense design were conducted with the cooperation and support of the American Society for Engineering Education, the Association of Collegiate Schools of Architecture, the Engineers Joint Council, the American Institute of Architects, and other technical and professional societies. These institutes for architectural and engineering faculty members were conducted at the University of Hawaii, Kansas State University of Agriculture and Science, Pennsylvania State University, Montana State College, Worcester Polytechnic Institute, and also at the Aspen Institute for Humanistic Studies.

At Denver, Colo., immediately preceding the national convention of the Association of Collegiate Schools of Architecture and the American Institute of Architects, the University of Colorado conducted a meeting of deans and department heads of architectural schools. About 30 officials participated in discussions on civil defense and were present when the grand prize was awarded for the third national fallout shelter design competition. The competition featured the incorporation of dual-use public fallout shelter space in community recreation facilities. In May 1966, about 30 deans of engineering

245-764 O—67——4

schools participated in a civil defense symposium at Pennsylvania State University.

Technical information and design competition.—Eight new technical publications on protective construction were issued during fiscal year 1966, making a total of 46 distributed on this subject. These included manuals, guides, technical memoranda and reports, and design studies.

About 100 OCD-certified shelter analysts provided materials used in publications to illustrate the incorporation of fallout protection in specific buildings; e.g., *Schools Built With Fallout Shelter*, TR–33, and *Buildings With Fallout Shelter*, TR–37. Instructors qualified in fallout shelter analysis and design also assisted in furnishing information for these publications.

In addition to disseminating technical information through professional advisory service (see *Design Techniques* in part III) and publications, the OCD accomplished much of this work through seminars and symposiums. For example, in accordance with contractual arrangements, the Department of Education at the University of Nebraska conducted a seminar for members of the Council of State Directors of Educational Plant Services. This was held in Lincoln, Nebr., just prior to their attending the annual meeting of the National Council on Schoolhouse Construction. They were briefed on OCD policy, shelter programs, vulnerability studies, and technical aspects of radiation shielding. Special consideration was given to inclusion of dual-use fallout shelter in school design and construction. A resolution adopted in favor of this principle replaced a previous one that declared the use of space for shelters incompatible with its use for teaching.

In November 1965, the University of Arizona conducted a 2-day symposium at Phoenix, Ariz., for State officials: civil defense directors, architects, and building officials. New trends in design for fallout protection were discussed, and the main objective was to acquaint the audience with the use of slanting techniques to increase fallout protection in construction of State and other public buildings. (See figs. 8 and 9.)

Through fiscal year 1966 contractual arrangements, the OCD developed automatic data processing methods for evaluating the effectiveness of incorporating fallout protection in proposed building designs. These methods were also designed to identify recommended improvements in protective construction and to provide reliable cost estimates of incorporating them. Application of these methods will enable the OCD to disseminate technical information on slanting techniques more rapidly and effectively to architects and engineers engaged in designing new buildings.

Figure 8.—South Salem Elementary School, Salem, Va. The one-story, air-conditioned, circular school was designed to provide classroom flexibility and implement team-teaching concepts for a student capacity of 630. Classrooms located along the outside peripheral ring are grouped in clusters of three units. Classrooms are separated by folding partitions. An inside corridor rings the classrooms and provides access to the cafeteria, auditorium, and library area in the center of the school. This corridor ring is widened at several points into common-space areas, each serving a group of three classrooms. (See fig. 9.)

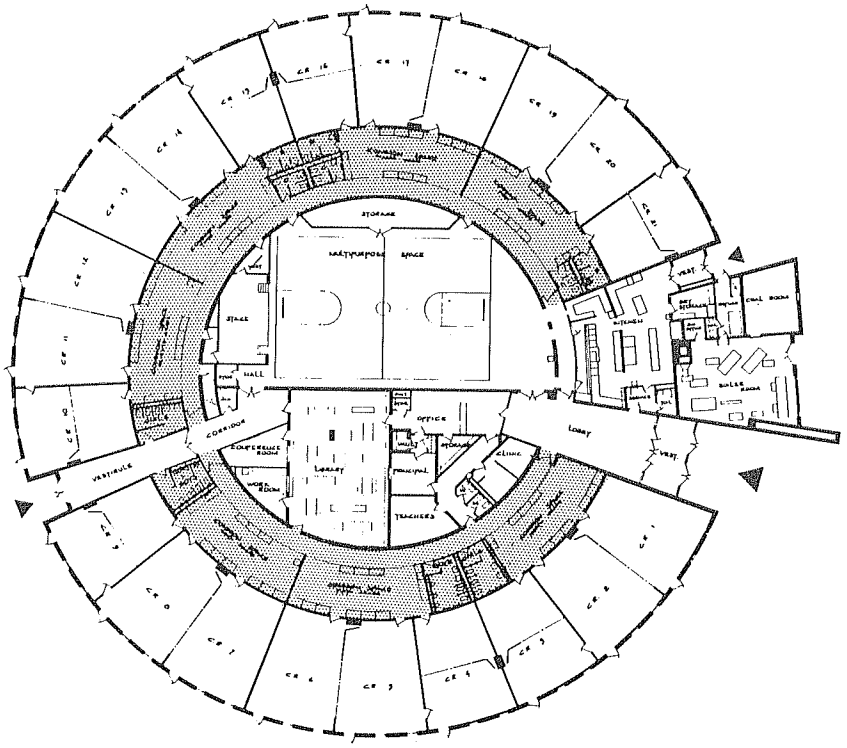


Figure 9.—Floor plan of South Salem Elementary School, Salem, Va. The shelter area is located in the inside corridor ring and common-space areas. Shelter was obtained by providing a 6½-inch concrete slab over the inside ring instead of a conventional steel truss system. Additional shielding was obtained by use of masonry corridor walls and exterior walls with minimum window areas in the classrooms. Abovegrade shelter space is available for virtually all of the students.

During fiscal year 1966, the American Institute of Architects (AIA) conducted the third nationwide fallout shelter architectural design competition for the OCD. Results of this competition will be included in a publication of the award winning designs incorporating dual-use public fallout shelter space in community center facilities. The first national competition, held in fiscal year 1962, featured the design of elementary schools; the second, conducted in fiscal year 1964, featured the design of shopping centers incorporating dual-use public fallout shelter space. The award winning designs of the first and second national competitions have been published and distributed to architects, engineers, community planners, school administrators, and others.

A student architectural design competition was cosponsored by the OCD and the Brooklyn Chapter of the AIA. The competition

featured the incorporation of dual-use public fallout shelter in a community center at a specific site in a residential area of Brooklyn, N.Y., and architectural students from the entire New York City area were eligible to participate. The College of the City of New York, the Institute of Design and Construction, and Pratt Institute participated by including the competition as part of scheduled instruction. Award-winning designs will be published and distributed to encourage similar competitions and to further disseminate information on inclusion of dual-use public shelter in building designs.

The OCD proposed that the U.S. Office of Education, DHEW, conduct a program to encourage effective use of slanting techniques in designing and constructing public school buildings. At the end of fiscal year 1966, the proposal was under consideration in the Office of Education.

Part IV

COMPLEMENTARY CIVIL DEFENSE SYSTEMS

The status of the complementary civil defense systems at the end of fiscal year 1966 is described in this part of the report. These systems are essential to preattack planning and postattack operations. They complement the nationwide fallout shelter system by making the effective use of fallout shelters possible. Functionally, these systems are: Civil Defense Alerting and Warning, Communications, Monitoring and Reporting, and Damage Assessment.

CIVIL DEFENSE ALERTING AND WARNING

Alerting.—The alerting of Federal agencies and State governments to developments that require actions to strengthen the Nation's readiness posture is a responsibility of the Office of Civil Defense. As a part of military or civil defense exercises, or separately, procedures established for this purpose are tested at least weekly at the national level and quarterly at the regional level.

During fiscal year 1966, alerting procedures at the national level were appreciably improved by using the Defense Coordination Teletypewriter Network (DEFCORD). Established by the Office of Emergency Planning (OEP) as a rapid means of transmitting emergency information to Federal agencies, DEFCORD was made available to the OCD for alerting purposes in the Washington metropolitan area. Via DEFCORD, the OCD can send written alerting messages simultaneously to most Federal agencies at the national level. Telephone communication facilities, previously used for alerting Federal agencies, were reserved as a backup medium.

Warning.—Under OCD policy control, the U.S. Army Strategic Communications Command (USASTRATCOM) maintains, operates, and tests the Federal warning systems. These are designed to disseminate warning to strategic points from which State and local governments are responsible for warning the public. The continental United States, including Alaska, is covered by a Civil Defense Warning System (CDWS) in which Federal, State, and local warning systems are joined to form an inclusive warning network, using the most reliable communications facilities available. Hawaii, American Samoa, Guam, Puerto Rico, and the Virgin Islands are served by separate warning systems.

Federal Warning Systems

National Warning System.—The Federal portion of the CDWS serving the continental United States, including Alaska, is the National Warning System (NAWAS). (See fig. 10.) From 3 USASTRATCOM–Continental U.S. National Civil Defense Warning Centers, continuously manned and operated by attack warning officers, warnings can be sent to OCD regional offices and to 761 warning points. The primary National Warning Center is at the Combat Operations Center of the North American Air Defense Command (NORAD), Colorado Springs, Colo. (See fig. 11.) Alternate ones are the National Two Warning Center at Federal Center, Denton, Tex., and the National Three Warning Center near Washington, D.C. Using a special voice communications system, they can directly and simultaneously alert the OCD regional offices and the 761 warning points within a few seconds. These warning points are at key Federal locations and in State capitals and numerous other cities from which warnings can be sent to the public via State and local warning systems. (See fig. 12.)

Improvements during fiscal year 1966 included the addition of 76 warning points to NAWAS, making a total of 761. Of these, 57 are at U.S. Weather Bureau stations. Direct access to Weather Bureau stations on NAWAS is significant for two reasons: (1) It augments the coverage of the CDWS, since the Weather Bureau is prepared to disseminate attack warning information over its communication systems; and (2) it provides an immediate source of severe weather information to all levels of civil defense.

Installation of duplicate NAWAS equipment or extensions in local emergency operating centers that provide fallout protection made it unnecessary to use Federal funds to provide fallout protection for many warning points. (See *Protective Structures* in part III.) By the end of fiscal year 1966, 69 extensions or alternate warning points of this type had been installed.

Washington Warning System.—This system, serving the Washington, D.C., metropolitan area, was strengthened by the addition of several sirens, making a total of 294. The system includes facilities for voice communications with local civil defense headquarters in the area as well as with certain Federal civilian and military installations.

Warning for Hawaii and United States possessions.—Warning facilities at appropriate military installations continued to serve these areas. A Federal warning system serving warning points in Hawaii also extends to Guam and American Samoa; another Federal system serves points in Puerto Rico and the Virgin Islands.

Radio warning system.—At the end of fiscal year 1966, the analysis of a proposed radio warning system was underway; preliminary

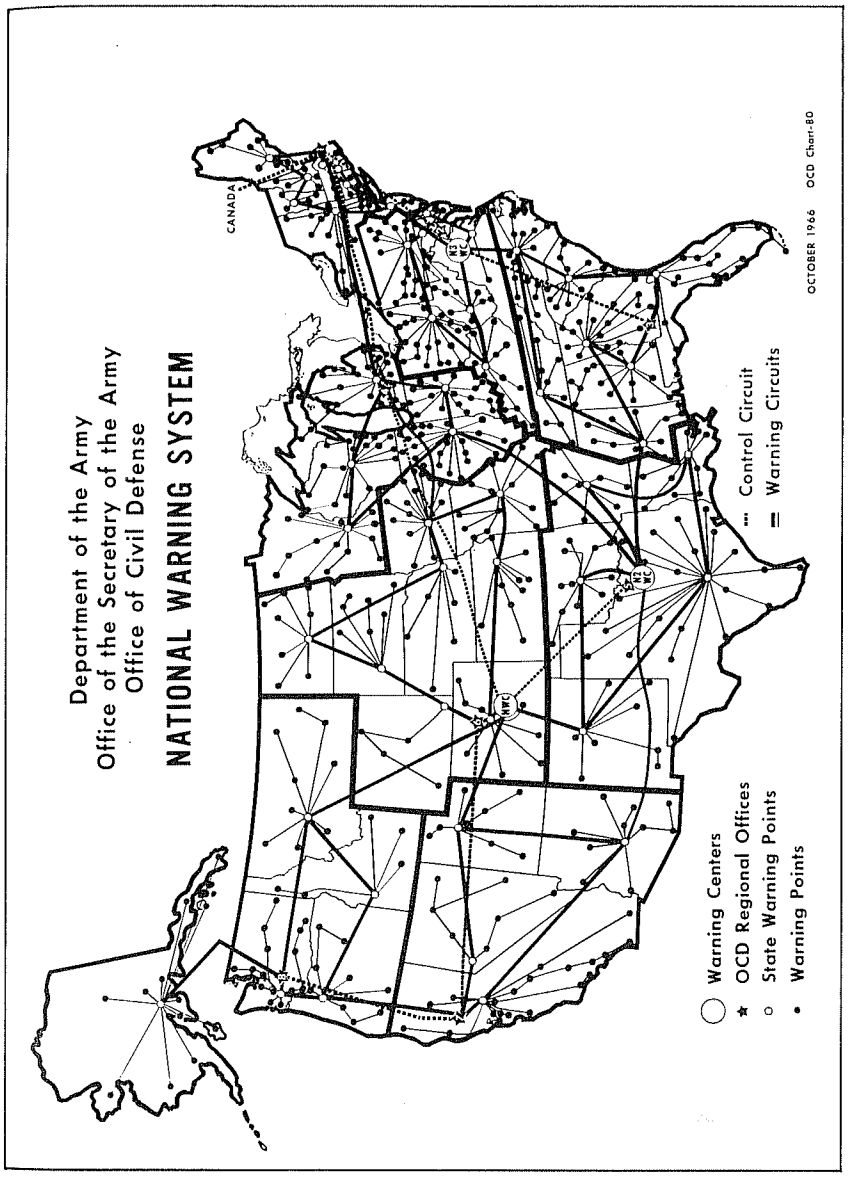


Figure 10.—National Warning System (NAWAS).

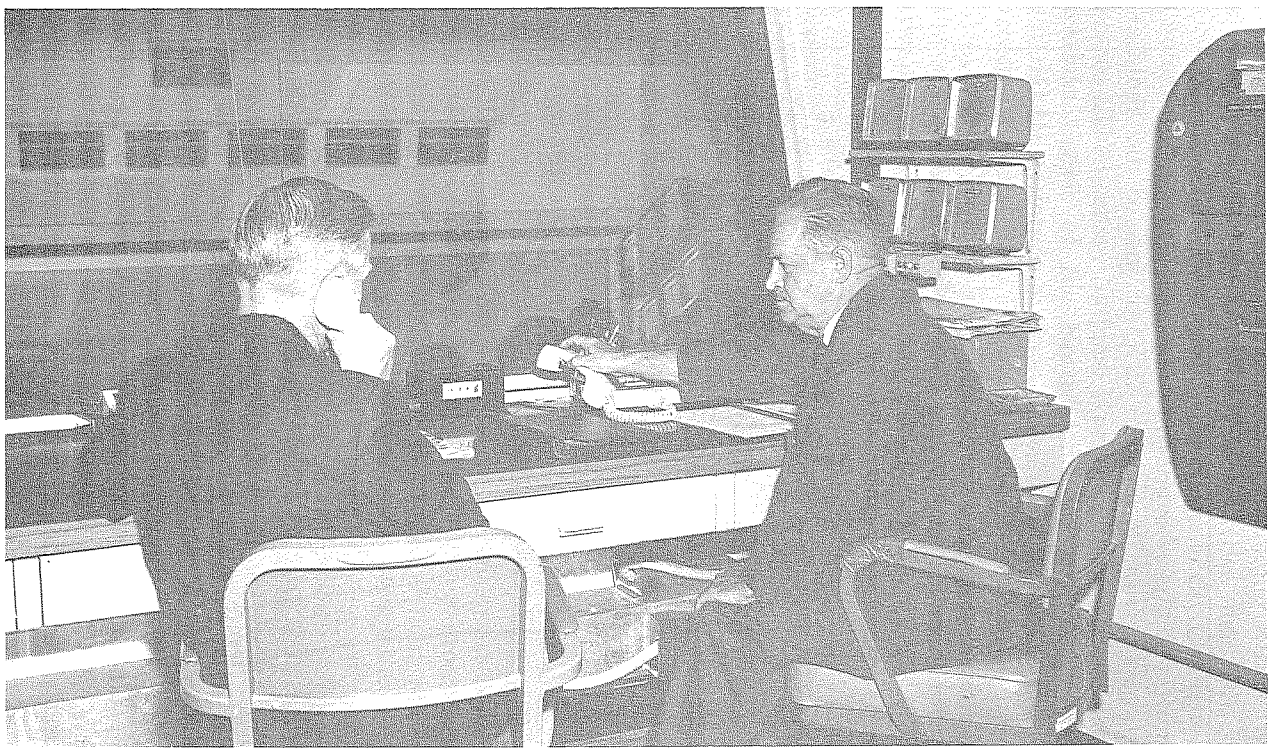


Figure 11.—National Warning Center. Located in the underground Combat Operations Center of the North American Air Defense Command, Colorado Springs, Colo., this is the primary point from which attack warnings would originate over the National Warning System (NAWAS).

Figure 12.—Warning Flow Chart for the continental United States.

studies for its development were completed in fiscal year 1965. Its design capabilities include dissemination of warning information to government officials and to the public, the control of warning sirens, and the operational features of an indoor warning system. As the result of fiscal year 1965 contractual arrangements, prototype components were developed; engineering field tests of a complete system will be started early in fiscal year 1967. Components include control consoles, special controllers for sirens, and several types of alarm receivers. Preliminary tests and measurements have been made in prep-

Warning System (NAWAS).

aration for the use of voice and teletype transmissions at a frequency of about 190 kHz [1] and for cooperative operation of commercial broadcast stations.

State and Local Warning Systems

From the 761 NAWAS warning points, State and local governments use many types of communications facilities to send warning and supplemental information to thousands of local warning points. Telephone, teletypewriter, and radio circuits, as well as specially devised warning systems, are used for this purpose. To help States and local political subdivisions strengthen their warning systems, the OCD continued to provide guidance information and financial assistance. For example, NAWAS extensions have been installed at 342 locations important to local civil defense organizations; 273 of these extensions were made with the help of Federal matching funds, and 69 to fallout-protected local emergency operating centers were federally financed.

During fiscal year 1966 the number of local warning systems established or strengthened as the result of Federal assistance totaled 294. About 2,200 local political subdivisions, with a total population of more than 36 million, have siren or voice sound warning systems.

To alert local civil defense personnel and government officials, the telephone and radio are used widely. To alert the public, both indoor and outdoor devices are used as part of local warning systems. The most common outdoor warning device is the siren, but horns, whistles, and voice transmissions are also used. Indoor warning devices include telephone, radio, and commercial communication facilities, such as public address systems and circuits for transmitting background music to the public.

Local warning systems may also be used to warn the public of natural disasters such as tornadoes, hurricanes, floods, and tidal waves. For example, these systems were used effectively during fiscal year 1966 to give tornado warnings at St. Paul, Minn., Jackson, Miss., and Topeka, Kans.

COMMUNICATIONS

Communications systems of primary interest to the OCD are those required for conducting civil defense operations and for addressing the public during emergencies.

Operational Communications

Under OCD policy control, USASTRATCOM is responsible for maintenance and operation of civil defense communications systems at the Federal level.

[1] KiloHertz (kilocycles per second).

Primary system.—The Civil Defense Telephone and Teletype System (NACOM 1) is the primary system for transmitting OCD operational communications. (See fig. 13.) It is designed for the speed, flexibility, and continuity of service required for civil defense emergency communications between OCD national and regional headquarters and between OCD regional headquarters and State civil defense offices. Trunkline circuits of the Department of Defense Automatic Voice Network (AUTOVON) are used for NACOM 1 connections between OCD national and regional headquarters. Leased full-time private lines for voice and teletype transmissions are used for communicating between OCD regional and State civil defense offices. NACOM 1 connections also extend to emergency relocation sites of selected Federal agencies and can be interconnected with commercial as well as military and other Federal teletype communications systems.

Improvements to NACOM 1 during fiscal year 1966 included the installation of transmission facilities for conducting voice conferences between OCD headquarters and all its regional offices. Facsimile communications equipment was installed at OCD national and Region Five headquarters. Teletype circuits were installed to provide a rapid means of communication between the four Canadian and the four U.S. regional offices that represent areas adjoining the boundary line between the two countries.

Alternate system.—The Civil Defense Radio System (NACOM 2) (see fig. 14) is the backup system for NACOM 1. NACOM 2 is a high frequency radio network for transmission of voice, code, or radioteletype messages. Control facilities for both NACOM systems are located in the same area to make them equally available.

During fiscal year 1966, NACOM 2 was extended to 13 additional States, making it operational at 37 State installations, the District of Columbia, Puerto Rico, and the Canal Zone. Contractual arrangements were made to extend its operations to eight additional States. Other improvements included the installation of prototype blast-protected, retractable transmitting and receiving antennas at three locations in OCD Region Five.

Emergency Broadcast System

The Emergency Broadcast System (EBS) is designed for communicating with the public during civil defense emergencies; e.g., before, during, and following enemy attack. The EBS operational plan is based upon requirements of the White House, the Office of Emergency Planning, and the Office of Civil Defense and is managed primarily by the Federal Communications Commission in accordance with Executive Order 11092 of February 26, 1963. Presidential messages and

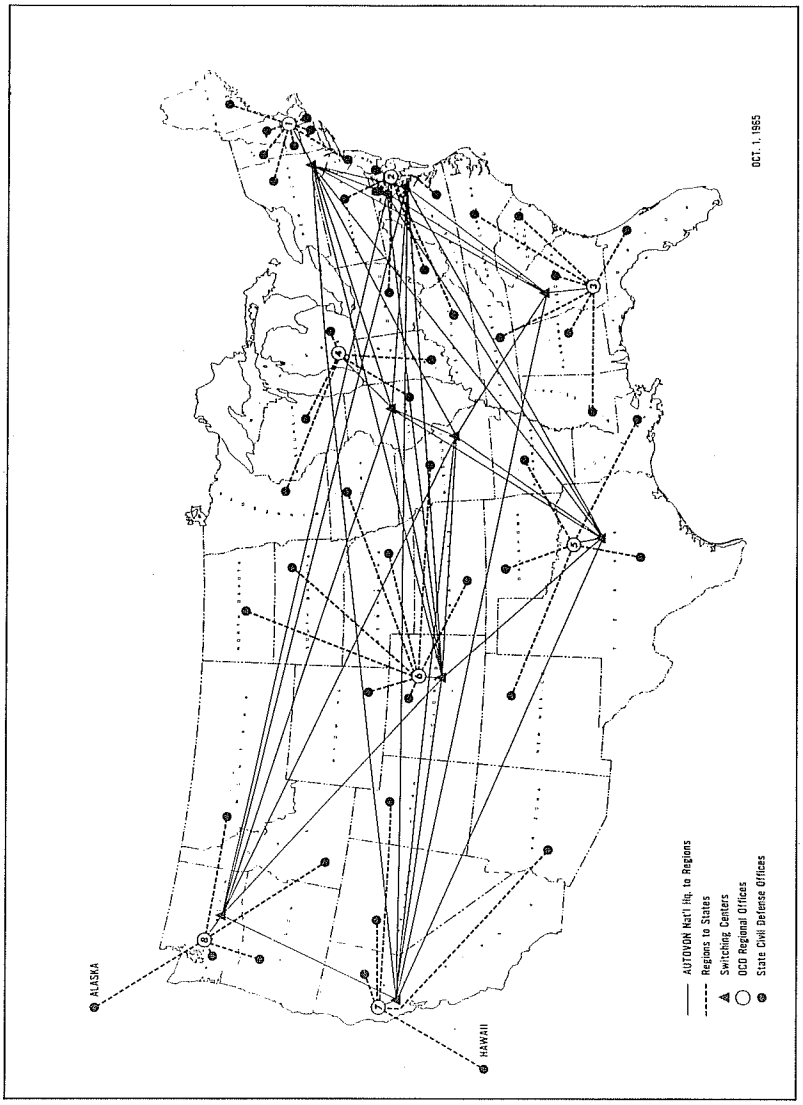


Figure 13.—Civil Defense Telephone and Teletype System (NACOM 1).

Figure 13.—Civil Defense Telephone and Teletype System (NACOM 1).

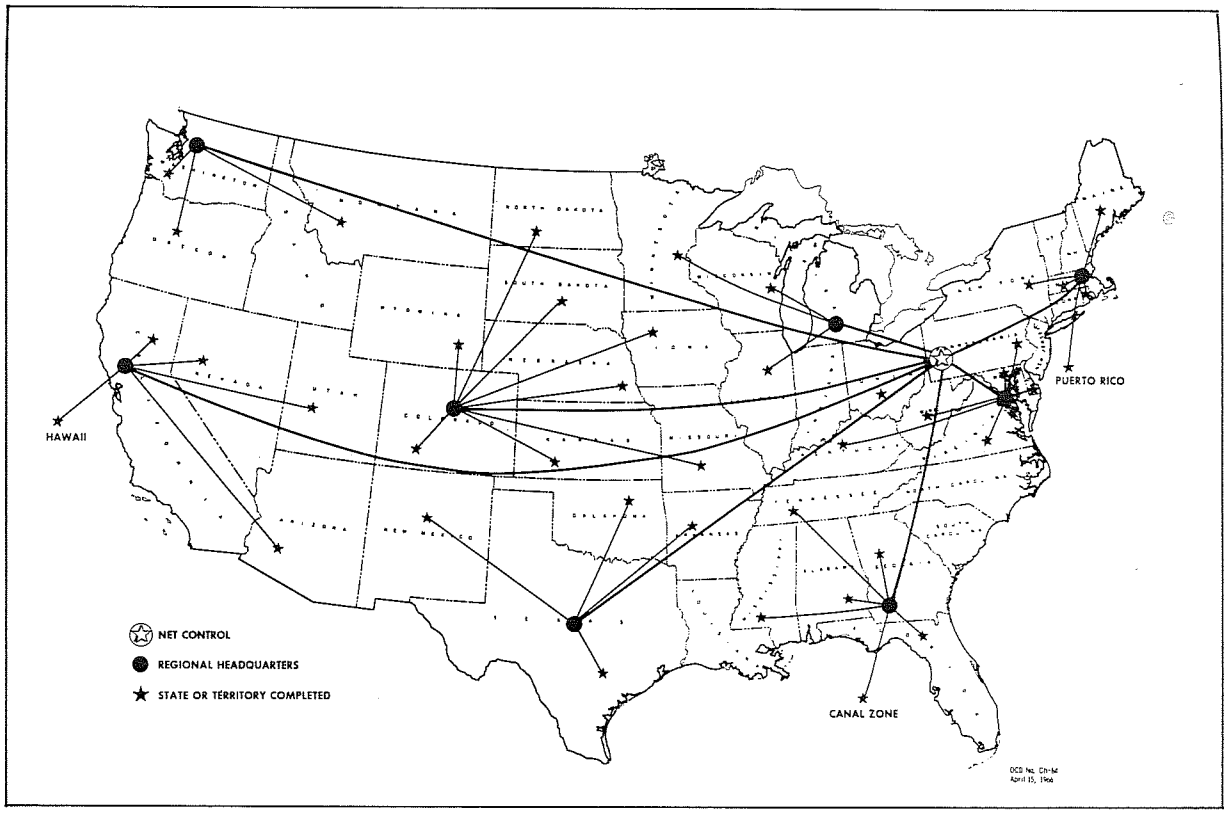


Figure 14.—Civil Defense Radio System (NACOM 2).

those of other national leaders and regional officials would be broadcast over the EBS as well as communications from State and local governments.

At the end of fiscal year 1966, 2,547 broadcast stations had been authorized to participate in the EBS. The OCD continued to help selected EBS radio stations make preparations for remaining operational under civil defense emergency conditions. (See *Protective Structures* in Part III.) The number of selected EBS stations with signed agreements to participate with the OCD in this effort totaled 587 on June 30, 1966, a net increase of 47 during fiscal year 1966. Of the 587 participating stations, 370 had completed construction for fallout protection, and 269 of the 370 had also provided required equipment.

Support of State and Local Systems

Provision of Federal matching funds and technical guidance continued to be the principal means of OCD help to State and local governments to strengthen their communications systems. With this assistance, several States inventoried their communications facilities to determine the feasibility of consolidating them into a system designed to meet State communications needs under all conditions.

A study of Hurricane Betsy, which struck New Orleans and other areas in Louisiana early in September 1965, produced information on the effects of hurricanes on communications. At a hurricane preparedness conference held in New Orleans late in fiscal year 1966, the results of this study proved helpful in demonstrating how an emergency center operates during hurricane conditions and how communications for dealing with disasters can be improved.

A method for determining the communications facilities available in a community was developed. The method was tested by practical application in two cities, and procedures for its use will be included in an appendix to the *Federal Civil Defense Guide.*

The Radio Amateur Civil Emergency Services (RACES) remained operational in all States and included more than 1,750 approved plans at the end of fiscal year 1966. Since 1952, RACES has enabled amateur radio operators to perform emergency communications functions as an important emergency supplement to State and local communications systems in accordance with plans approved by the State.

RADIOLOGICAL MONITORING AND REPORTING [1]

A controlling influence on all aspects of civil defense emergency operations would be the extent, intensity, and duration of radioactive fallout hazards following a nuclear attack. Basic to rendering sound

[1] See app. 4 for statement on chemical and biological defense.

decisions for conducting these operations is the collection, evaluation, and dissemination of this information to all levels of government. A nationwide radiological monitoring system has been designed for this purpose. Major operational elements of this system include radiological monitoring staff and equipment in public fallout shelters and at strategically located monitoring sites, as well as personnel at emergency operating centers to process and evaluate the data, and personnel and facilities to maintain and calibrate radiation instruments.

Monitoring Operations

Monitoring stations.—A grand total of 58,062 Federal, State, and local radiological monitoring stations were operational by the end of fiscal year 1966. (See fig. 15.) This included 10,206 Federal and 47,856 State and local stations. The net gain for the year was 2,888 State and local stations.

Each monitoring station meeting minimum requirements has been provided with one radiological defense operational set CD V–777. (See fig. 16.) The requirements include suitable geographic location, fallout protection, adequate communications facilities, and at least two trained radiological monitors. Some stations are located in public fallout shelters that meet these requirements. The monitoring staff in these cases would perform both shelter and operational monitoring functions. Upon completion of their primary assignments,

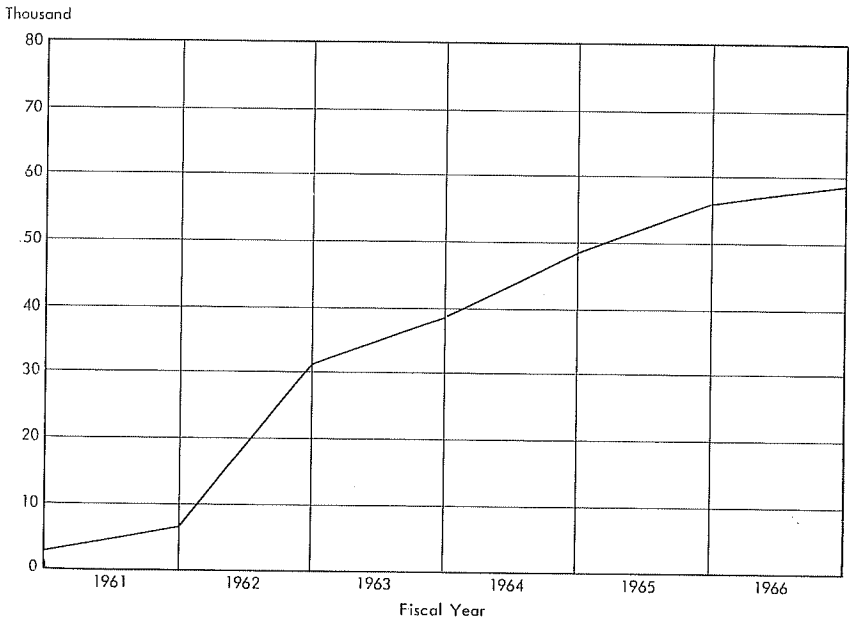


Figure 15.—Growth in number of Federal, State, and local radiological monitoring stations.

245–764 O—67——5

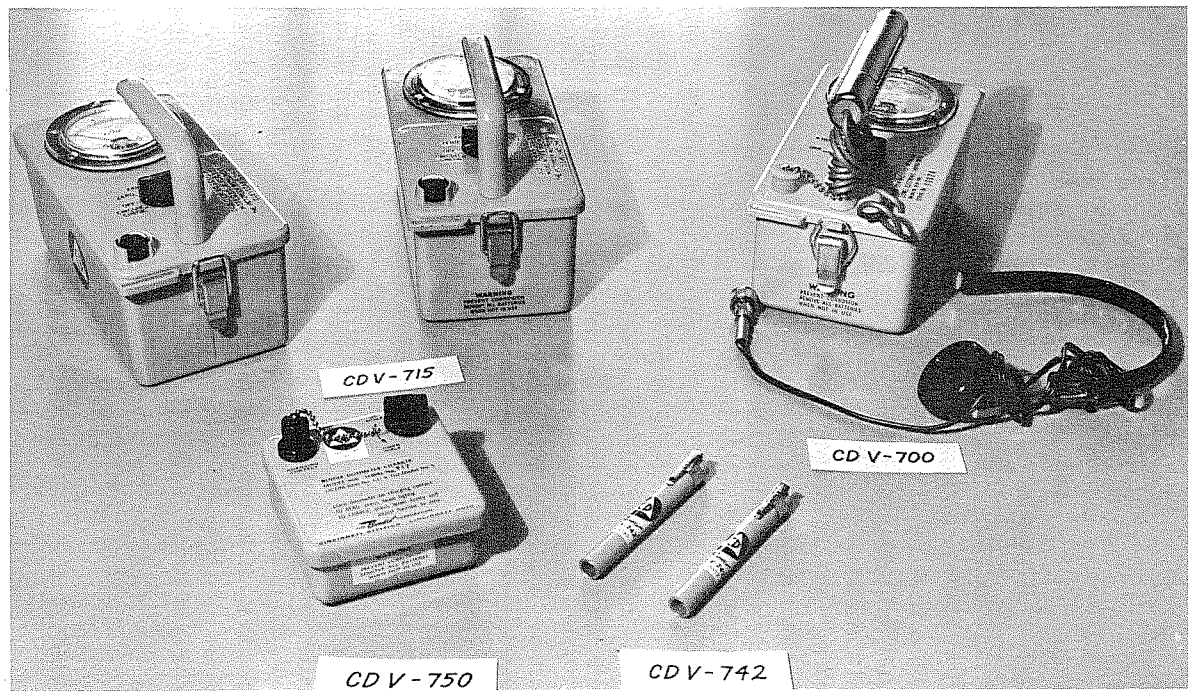


Figure 16.—Radiological defense operational set CD V–777.

1 CD V–700 (low range beta-gamma survey meter)
2 CD V–715 (high range gamma survey meters)
2 CD V–742 (dosimeters)
1 CD V–750 (dosimeter charger)

Except that only one CD V–715 survey meter is included in the public fallout shelter radiation kit CD V–777–1, it contains the same instruments as does the operational set CD V–777.

shelter monitors would be reassigned to help perform other radiological monitoring and reporting functions.

Some monitoring stations are located at sites of Federal agencies that have been assigned civil defense responsibilities by Executive orders. Some are located at State facilities, but the majority, established by local governments, are at local facilities. All stations would supply the local government with fallout data pertinent to its operational area. In addition, certain Federal stations would transmit fallout data to the OCD.

Selected monitoring stations are furnished additional radiological defense equipment in the form of radiological monitoring support set CD V–777–A. (See fig. 17.) It includes a remote-reading, high range survey meter that permits radiation measurements to be taken up to a distance of 25 feet. This lessens the exposure hazard to monitors operating in areas of high radiation intensity and permits monitors within stations to obtain radiation measurements with minimum exposure to high radiation intensities that may exist outside. The support set also makes more survey meters available to stations that are assigned extensive mobile monitoring tasks or participate in aerial monitoring operations. To selected monitoring stations meeting special qualifications, but not requiring other instruments in the support set, the remote-reading survey meter is made available separately.

Shelter monitoring.—A total of 77,367 public fallout shelters had been provided with at least one radiation kit CD V–777–1 (see fig. 12) by the end of fiscal year 1966. This was a net increase of 9,742 during the year. At least two trained radiological monitors are scheduled for each of these shelters.

Radiological monitoring in public fallout shelters would supply radiation data important to the welfare of shelterees following nuclear attack. These data would show the best protected areas for occupancy, and areas of adjoining facilities would be monitored to determine the advisability of using them to alleviate overcrowding. The information would also be used to determine radiation exposure of shelterees and the need for decontamination. Finally, use of these data by officials at the local emergency operating center would enable them to direct relocation movements to other shelter, should conditions warrant it.

Aerial monitoring.—During fiscal year 1966, 42 States were furnished equipment to develop aerial radiological monitoring capability. This equipment included 106 CD V–781 aerial survey meters and other instruments. (See fig. 18.) In addition, procedures for aerial monitoring were distributed to State and local governments.

Aerial monitoring is designed to supplement the work of monitoring stations and their mobile teams and would be necessary for rapidly obtaining early data upon which to plan immediate emergency oper-

Except that only one CD V–715 survey meter is included in the public fallout shelter radiation kit CD V–777–1, it contains the same instruments as does the operational set CD V–777.

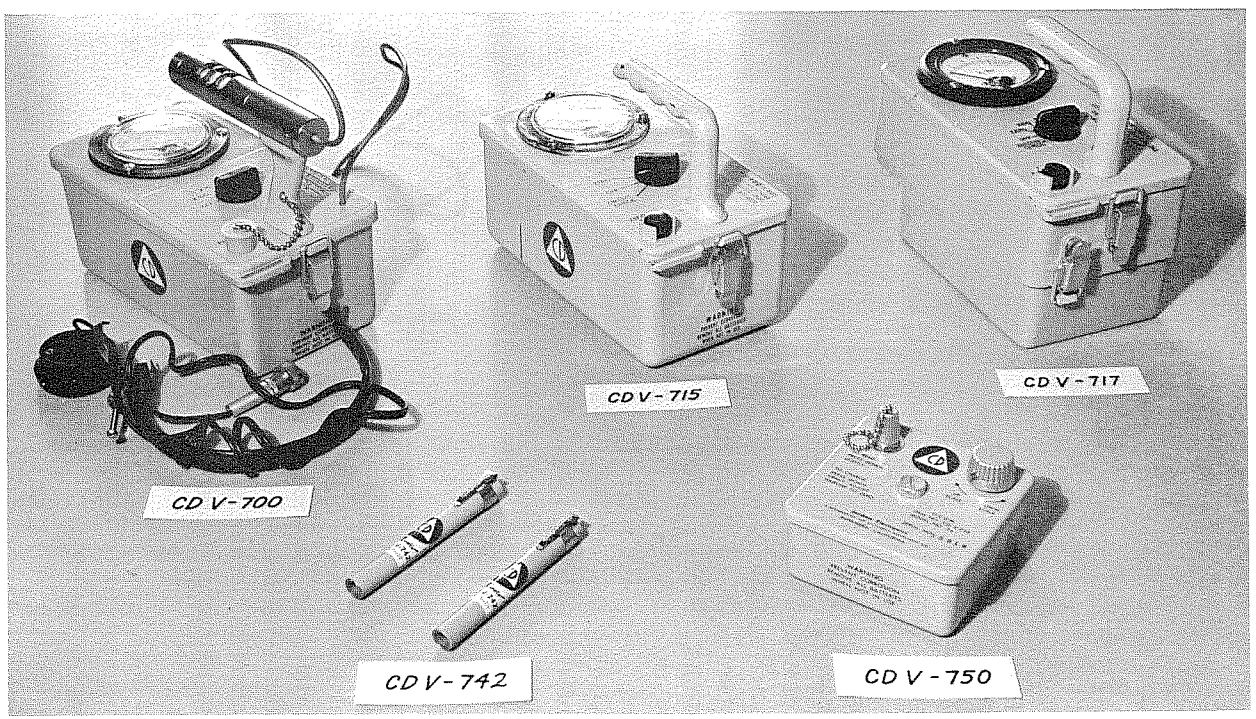


Figure 17.—Radiological monitoring support set CD V–777–A.

1 CD V–700 (low range beta-gamma survey meter)
1 CD V–715 (high range gamma survey meter)
1 CD V–717 (remote-reading, high range survey meter)
2 CD V–742 (dosimeters)
1 CD V–750 (dosimeter charger)

1 CD V–715 (high range gamma survey meter)
1 CD V–717 (remote-reading, high range survey meter)

2 CD V–742 (dosimeters)
1 CD V–750 (dosimeter charger)

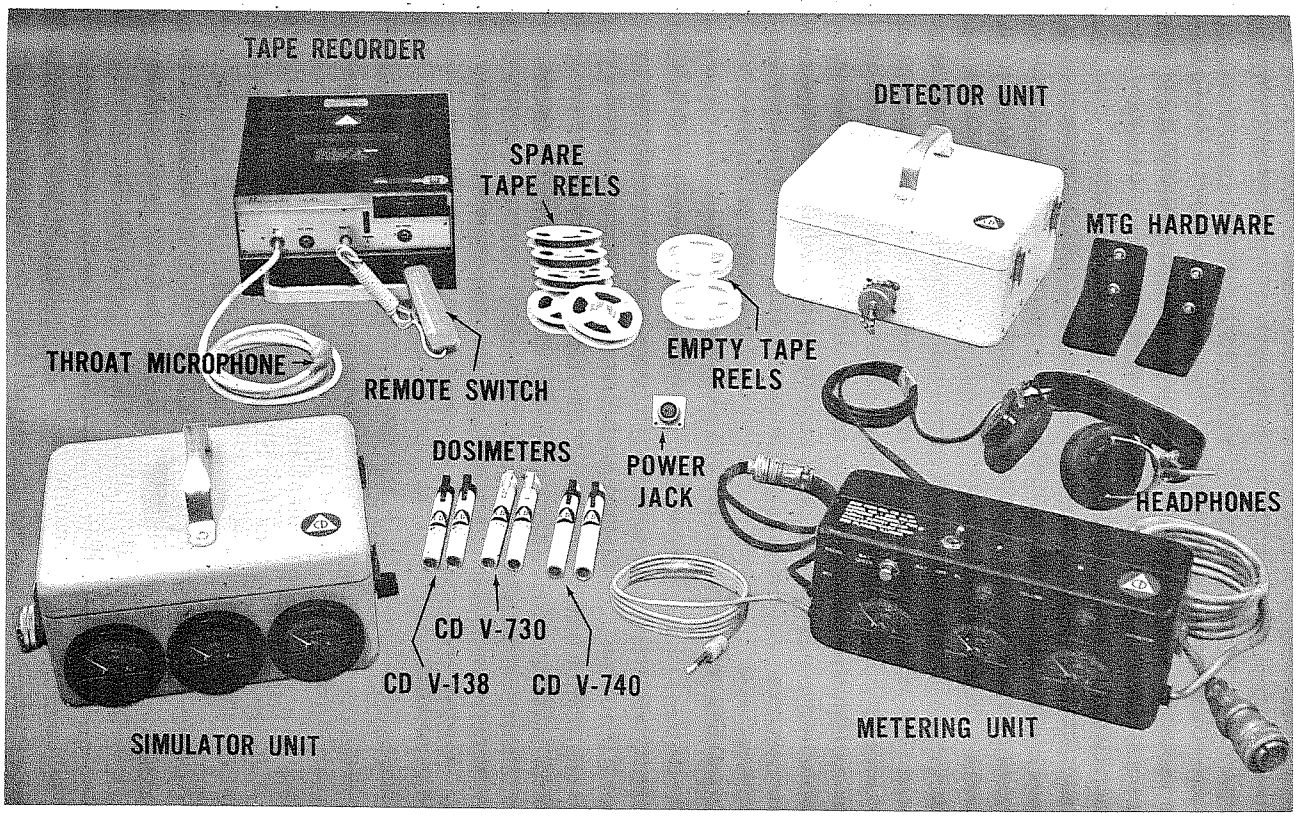


Figure 18.—Aerial radiological monitoring equipment.

ations. It would be the only practical means of rapidly monitoring farming and grazing lands, as well as other large rural areas. Aerial monitoring would also be needed to overcome monitoring limitations caused by damage to fixed stations and by restrictions on mobile surface monitoring in areas of excessive radiation.

Postattack radiation exposure control.—Measurement of the cumulative radiation exposure of emergency personnel conducting postattack operations would be necessary to permit precautions for avoiding excessive radiation. The States have been supplied with 1,640,040 dosimeters and 71,297 dosimeter chargers for this purpose. These instruments would be made available to emergency personnel at public fallout shelters, emergency operating centers, and other redistribution sites.

Fallout forecasts.—The OCD continued contractual arrangements with the U.S. Weather Bureau for disseminating data on upper wind observations throughout the continental United States. This information is transmitted twice daily to several hundred cities where it is available for redistribution and guidance as needed at emergency operating centers to develop fallout forecasts.

Distribution and Servicing of Instruments

Distribution.—Radiological defense instruments distributed during fiscal year 1966 totaled more than 263,000, making a cumulative total of over 3.2 million (see fig. 19) as follows:

To States for:	
Public fallout shelters	417,535
Operational purposes	2,007,475
Maintenance and calibration	94,799
Training and other purposes	513,772
To Federal agencies for training and other purposes	169,904
Total	3,203,485

Contracts were awarded during fiscal year 1966 in the amount of $0.8 million to procure equipment, including spare parts and shop tools, as well as testing apparatus for State inspection, maintenance, and calibration shops.

Inspection, maintenance, and calibration.—At the end of fiscal year 1966, the OCD had established a federally funded inspection, maintenance, and calibration program in 48 States, the District of Columbia, and Puerto Rico.

Frequent inspection, periodic calibration, and prompt repair of instruments are required to maintain the operational readiness and reliability of the radiological monitoring and reporting system. Monitors are responsible for checking the operational performance of

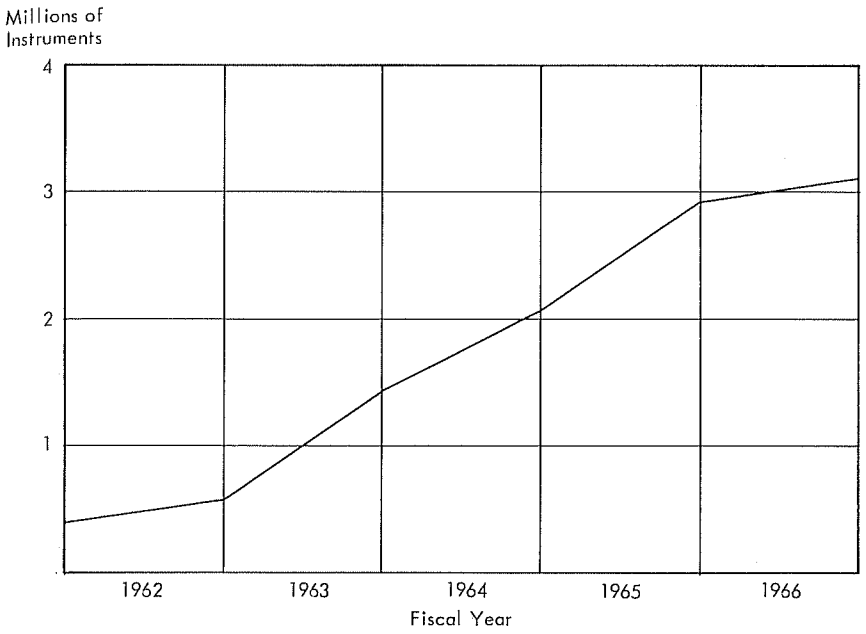


Figure 19.—Cumulative distribution of radiological defense instruments.

the instruments in their care at least bimonthly and taking necessary action for repair or replacement of instruments. Statewide servicing systems are responsible for more thorough inspection and for minor repair of instruments at storage sites in monitoring stations and public shelters. Major repair and calibration and maintenance of instruments are performed at central facilities that are part of these systems. The service rendered by these systems also includes the pickup and return of the instruments.

Training and Technical Guidance

During fiscal year 1966, radiological monitors were trained at U.S. Army bases and through the Civil Defense Adult Education and the Civil Defense University Extension Programs. Monitor instructors were trained at the OCD Staff College and by means of State college and university extension courses. (See *Training and Education* in part V.) At least 2 trained monitors were scheduled for each of the 58,062 monitoring stations in operation by the end of the fiscal year. To provide for the 24-hour emergency operations, many stations had 2 additional trained monitors.

Technical guidance for planning, implementing, and operating civil defense systems is furnished to State and local governments in the *Federal Civil Defense Guide* (FCDG). Manuscripts completed

during fiscal year 1966 included two additions to this publication: *Aerial Radiological Monitors Handbook*, FG–E–5.9.1, a supplement to the *Radiological Monitors Handbook*, and *Peacetime Radiological Incidents*, FCDG, part E, chapter 5, appendix 10.

DAMAGE ASSESSMENT

The OCD Damage Assessment System is designed to provide certain information on resources that would be necessary in carrying out survival and recovery actions following nuclear attack. Damage assessment systems would be needed to provide readily available information upon which to base decisions for conducting emergency operations.

Responsibility for developing plans and operating systems for nationwide postattack assessment of damage devolved upon the OCD as the result of Executive Order 10952, July 20, 1961. In consonance with other Executive orders and OCD plans and programs, Federal departments and agencies are responsible for maintaining damage assessment capabilities related to their normal functions and for providing pertinent data to the Department of Defense, OCD.

Some major developments and accomplishments in damage assessment and related planning during fiscal year 1966 included:

1. A cost effectiveness study of possible alternative shelter programs.—A comparison of their damage limiting capabilities for various combinations of hypothetical attacks produced information basic to making civil defense policy decisions. The data also were useful in civil defense operational planning.
2. Distribution of manual damage assessment aids.—Instructions for using the Lattice Assessment Program (LAP) and associated materials were completed and made ready for distribution. LAP is a rapid method for manually estimating postattack damage to resources in standard metropolitan statistical areas. For use in other areas, a different system has been developed. It relies upon using lists of resources and special map overlays prepared by the Bureau of the Census. The OCD also has adapted automatic data processing equipment for plotting resource data on map overlays, an important labor-saving procedure.
3. Postattack population estimates.—Under OCD sponsorship, the Bureau of the Census completed development of a statistical sampling technique for postattack use to obtain estimates of the postattack population of each State and OCD region as well as of the entire Nation. Operational procedures for using the technique were being developed at the end of fiscal year 1966.
4. Inventory of chemical and biological laboratories by the U.S. Public Health Service.—This project continued to locate laboratories with capabilities for diagnosing human and animal diseases and for iso-

lating and identifying crop diseases and vectors. Data obtained from this work will be used to develop a network of epidemiological laboratories for use in postattack diagnostic work.

5. Collection of data on electric power industry.—In its periodic survey of this industry, the Federal Power Commission included several items of information for use in postattack damage assessment.
6. Progress in data processing.—The fabrication of an electronic scanning system was approximately 75 percent complete by the end of fiscal year 1966. This system will automatically translate data from original documents of special design into machine readable form and store them on magnetic tape. Upon completion, the scanning system will be available for use as a subsystem of various operational computer systems.
7. Vulnerablity analysis of municipal water systems serving large metropolitan areas.—A pilot study of selected cities was started to test the feasibility of using automatic data processing equipment for conducting damage assessment studies of major water supply systems.
8. Survival resources planning activities.—The Office of Civil Defense continued to work with the Office of Emergency Planning, other Federal agencies, and State and local civil defense organizations in the development of postattack plans for the distribution of survival resources. A major OCD responsibility is to provide State and local governments with guidance on plans for postattack distribution, use, and conservation of secondary resources; e.g., retail stocks, intrastate wholesale stocks used to meet essential needs within a State, and resources which, by arrangements between Federal agencies and the States, would be subject to local and State control.

Part V

FEDERAL ASSISTANCE PROGRAMS AND ACTIVITIES

Some type of Federal assistance to State and local governments is available directly or indirectly in support of practically every element of the civil defense program. This is a logical development, since by statute (Public Law 85–606 of 1958), responsibility for civil defense is vested jointly in the Federal Government and in the States and their political subdivisions. Development of the nationwide fallout shelter system, complementary civil defense systems, and community shelter planning (see parts III and IV) are examples of Federal assistance. Other major forms of Federal assistance are covered in this part of the report.

TECHNICAL ASSISTANCE AND GUIDANCE

Comprehensive guidance on management and control of State and local civil defense was provided by the OCD through the use of annual program papers and the dissemination of information obtained from them and from other sources. Policy and operational guidance was supported by publications and knowledge derived from a series of system development projects. Additional technical assistance and guidance were provided through readiness exercises and several other procedures and arrangements designed to help State and local governments develop and strengthen their civil defense programs.

Management Control

Program papers.—In addition to the 50 States, more than 4,000 local governments, covering about 89 percent of the national population, submitted annual programs papers and related semiannual progress reports in fiscal year 1966. As a prerequisite to obtaining Federal matching funds and surplus property donations for civil defense use, each political subdivision must submit these documents.

The preprinted program paper contained the specific activities and elements of a balanced civil defense program, with appropriate provisions for reporting on each item quantitatively: (1) Total requirements, (2) status at beginning of fiscal year 1966, and (3) schedule of planned actions. Activities covered included public fallout shelter stocking, training of shelter managers and radiological

monitors, establishment of emergency operating centers, and other necessary actions.

In December 1965, the participating local governments were provided a computer-prepared form to simplify reporting of semiannual progress. This form was used to supply information previously reported so that only updating action was needed to make the report entries before returning the form. In May 1966, local governments again were furnished a computer-processed form to be used for reporting on the program progress for the last half of fiscal year 1966 and the planned program for fiscal year 1967.

The preprinted program papers outline the requirements of a balanced civil defense program. Review of the completed program paper forms by State and OCD officials helped them to provide local governments with more effective guidance in planning and operating their civil defense programs.

Integrated Management Information System.—During fiscal year 1966, the major elements of an Integrated Management Information System (IMIS) were established, using electronic computers. Operation of the IMIS is based primarily upon data obtained from the local program papers discussed in the preceding paragraphs. But other civil defense data are also included; for example, data on the nationwide fallout shelter system and other elements of the civil defense program are integrated with the data in the local program papers during computer processing of the information. The primary purpose of IMIS is to provide information for program management at Federal, State, and local levels. The system can be used to produce special report summaries for practically any geographical area covering any major element of the civil defense program.

As a result of the operational testing of IMIS in fiscal year 1966, State and OCD regional offices obtained information that helped them identify communities in need of special assistance. Further testing and operational development of IMIS were planned for fiscal year 1967.

Policy and Operational Guidance

Federal Civil Defense Guide.—Supplemented by individual contacts and group briefings, the *Federal Civil Defense Guide* (FCDG) remained the principal means of furnishing Federal agencies and State and local governments with guidance on policy and operational procedures pertaining to the civil defense program. During fiscal year 1966, 23 separate publication items were issued as part of the FCDG, and 14 additional publications keyed to specific parts of it were completed and distributed.

Major new FCDG issuances were mainly on *Community Shelter Planning.* (See part III.) Other subjects covered included (1)

Federal contributions for civil defense equipment and personnel and administrative expenses, (2) Federal surplus property donations for civil defense, (3) revised information on fallout shelter water requirements and guidance on water containers issued for public fallout shelters, and (4) information on the use of the computer-processed form for submission of annual program papers and semiannual progress reports.

Emergency Operations Systems Development (EOSD).—During fiscal year 1966, the OCD, through contractual arrangements, continued a series of EOSD projects designed to develop realistic civil defense systems in support of effective shelter usage and emergency operational procedures. Major developments on these projects are summarized in this section of the report.

A project designed to apply computer techniques in allocation of shelter for community shelter planning purposes gave promise of proving helpful to local governments. Analysis of traffic data as a major factor in planning the movement of people into shelters is part of this project. In a related project on movement to shelters, a preliminary draft of guidance material intended for use by urban planners and traffic engineers was prepared.

To aid urban planners in the interim solution of problems relating to unfilled requirements for standard shelters, the OCD began to make contractual arrangements to identify the best options available under various conditions. The purpose of this project is to assure allocation of the best available fallout protection, pending availability of sufficient shelter space meeting OCD criteria. Included among recommended options were the allocation of less space per person, allowance of increased travel time to permit use of space available at greater distances, and use of space with protection factor of less than 40. Consideration was also given to the feasibility of using mines, caves, ships, and unsurveyed home basements. As the result of work in a related EOSD project, the final draft of a manual was being prepared to provide information on planning and constructing expedient fallout shelter; i.e., protection improvised during a crisis buildup.

An EOSD project report on fire defense helped to develop a realistic perspective for an OCD fire defense program. An element of this program would be to train the public in fire defense skills applicable at home or in public fallout shelters. Contractual arrangements were made with the International Association of Fire Chiefs to develop training materials for this purpose, and plans were made to provide local fire departments with these materials to train the public how to safeguard public fallout shelters against fire as well as how to help firemen in this effort.

A preliminary analysis was made of health and medical problems related to postattack conditions. After more information has been

developed, recommendations will be made in accordance with results of a more complete analysis.

Work was continued on development of recommended actions that State and local governments could take during periods of increased international tension to strengthen civil defense readiness. Contractual arrangements were made near the end of fiscal year 1966 to investigate the feasibility of establishing an increased readiness information system and to identify its requirements and operational elements. The system would be designed to provide State governments and the Federal Government with timely information on increased readiness actions taken by local and State governments during periods of severe international tension.

An evaluation of local communications that would be required in support of shelters and emergency operations was completed. At the end of fiscal year 1966, this evaluation was the basis for the proposed development of recommendations and of guidance materials that would be made available to local governments.

As the result of an EOSD project on the maintenance of law and order and with the help of the International Association of Chiefs of Police, the OCD began preparation of guidance materials to help local police departments prepare for emergency operations applicable to all phases of civil defense. A course, *Law and Order Training for Civil Defense Emergency*, was developed for auxiliary police, and material was made available to regular policemen informing them about their civil defense functions. Closely related to this work is the military support that civil authorities might need in a civil defense emergency. At the end of fiscal year 1966, procedures were being developed for requesting this support at the OCD regional and State and local levels.

The final draft of a manual providing guidance for State and local governments in conducting civil defense emergency operations was nearly completed in fiscal year 1966. Subjects covered include the staffing and operation of emergency operating centers and guidance on the organization, procedures, facilities, and equipment needed to analyze emergency situations and take effective action to save lives and property by making the best use of surviving resources during initial recovery operations.

The need of engineering support for decontamination, transportation, fire defense, and rescue operations was evaluated in relation to making effective use of public fallout shelters. A closely related EOSD project on the role of rescue operations led to the conclusion that primary emphasis should be on immediate rescue through individual actions before arrival of fallout, and secondary emphasis should be on supporting organized rescue operations when radiological

conditions permit. Further analysis of this work will determine need for local guidance and recommendations on rescue procedures.

The first phase of a study of the radiological defense system indicated the need for postattack radiological monitoring in public fallout shelters in addition to operation of fixed monitoring stations at strategic locations. The second phase of the study, the evaluation of the adequacy of the radiological defense system, was started by conducting a series of exrcises in selected communities.

A preliminary analysis of the need and feasibility of remedial actions by shelterees to avoid more immediate hazards, such as fire, revealed the need to develop guidance materials on this subject. Shelter managers and the staff in charge of emergency operating centers will be supplied with guidelines to help them decide when remedial movement should be ordered.

During fiscal year 1966, as the effort to train more shelter managers was continued, the OCD also started to develop shelter-management guidance materials for use in public fallout shelters. Analysis of shelter management functions and operations suggested the conclusion that the presence of trained shelter managers in shelters would increase survival probabilities, and that prepositioned shelter instructions would be instrumental in saving lives in the absence of shelter managers.

An analysis of local warning systems and alternative warning methods was completed. Consequently, a revision of FCDG guidance material on warning was begun, and studies of local industrial and commercial warning systems were continued.

As a result of studies completed on emergency welfare services, the OCD requested that the Welfare Administration of DHEW conduct a sample survey of selected communities to determine the feasibility and potential effectiveness of proposals for organizing local emergency welfare leadership.

Other Technical Assistance and Guidance

Readiness exercises.—More than 1,100 local governments, 47 States, the District of Columbia, Puerto Rico, and the Virgin Islands prepared to participate in a nationwide civil defense exercise associated with a national military exercise and a national readiness exercise sponsored by the Office of Emergency Planning. Since circumstances required cancellation of the associated exercises, the civil defense exercise was of necessity limited to State and local operations. But the seminar preparations for the exercise produced useful results, since they were based on the hypothetical buildup of a period of international tension culminating in a hypothetical enemy attack and thus enabled the participants to analyze their shelter capabilities and other readiness features more realistically.

At the end of fiscal year 1966, most of the plans were complete for a nationwide civil defense exercise scheduled for fiscal year 1967. The exercise is designed to involve all levels of government and will include alerting, increased readiness actions, and manning of emergency operating centers. Also included will be warning, communications, attack analysis, operational reporting, and the making of decisions appropriate to the situations developed during the exercise.

By participating in four command post exercises conducted by the North American Air Defense Command, the OCD obtained realistic tests of Federal agency and internal staff alerting procedures of OCD national and regional headquarters.

Through contractual arrangements, the OCD developed exercise guidance material for use by State and local governments. Based on exercise experience gained over a 4-year period, manuals on the subject were being developed during fiscal year 1966.

Military Standby Reserve officers.—By the end of fiscal year 1966, State and local civil defense directors had requested the services of 7,890 officers. However, only 3,446 officers were available, and 2,305 of them received orders to participate in the civil defense program. Orders could not be levied in many instances because the officers were not located where their assistance was requested. The assignment of civil defense duties to Standby Reserve officers began in fiscal year 1962, when the Secretary of Defense authorized them to acquire retirement credit for voluntary participation in civil defense work.

The American National Red Cross (ANRC).—State and local governments were provided advisory services of the ANRC through OCD regional offices in acordance with continued contractual arrangements. During fiscal year 1966, these services strengthened local efforts in community shelter planning, promoted effective use of local ANRC chapters in civil defense training, and supported efforts to incorporate the resources of community agencies effectively in local civil defense programs.

National Defense Transportation Association (NDTA).—During fiscal year 1966, an additional four local NDTA chapters and local governments made arrangements for the voluntary use of NDTA transportation facilities and personnel for civil defense purposes. This increased to 60 the number of metropolitan areas where these arrangements had been completed as the result of a fiscal year 1964 agreement between the NDTA and the Department of the Army, OCD. NDTA chapters provided emergency transportation in several major disaster areas. An excellent example was the performance of the Houston and New Orleans chapters, following Hurricane Betsy in September 1965.

Automatic data processing.—The OCD began to offer State and local civil defense organizations technical assistance in developing a gen-

eralized automatic data processing system to provide information needed for daily management of their civil defense operations. Briefings on development of such a system were given at several OCD regional offices and at the Staff College, and surveys for developing the system were made of the District of Columbia, the States of Oklahoma, New York, and Massachusetts, and Erie County, N.Y. A prototype system developed for the District of Columbia was being tested by the end of fiscal year 1966.

TRAINING AND EDUCATION

During fiscal year 1966, the OCD continued training and education activities designed to support civil defense operations nationwide at all levels of government and to provide civil defense education to the public. This included the instruction of key leaders in planning and directing civil defense operations, the training of personnel in skills that would be needed in civil defense emergencies, and the education of the public in civil defense. The preparation of suitable training materials, as well as actual instruction, was also continued as a basic part of training and education activities.

Fiscal year 1966 progress in major training and education activities is described in this section of the report. Federal financial support of OCD-approved State and local training activities (see *Financial Assistance* in part V) was closely related to this work.

Professional and Technical Training

Throughout fiscal year 1966, the principal means of providing civil defense professional and technical training included the OCD Staff College, the extension divisions of 52 universities and colleges, the Civil Defense Adult Education Program, and the facilities of various Army posts. Operation of two OCD schools, Eastern Training Center, Brooklyn, N.Y., and Western Training Center, Alameda, Calif., was terminated on November 1, 1965. This action was made possible by the wide geographical dispersal of civil defense training available through the Civil Defense University Extension and the Civil Defense Adult Education Programs.

OCD Staff College.—Key Federal, State, and local civil defense personnel and others trained at the OCD Staff College, Battle Creek, Mich., and at the OCD schools that were closed early in the fiscal year totaled 2,877 for fiscal year 1966. The cumulative number of graduates of OCD schools since fiscal year 1960 totaled 28,715. In addition to government officials, graduates included educators, industrial management officials, and others with high levels of interest and

245-764 O—67——6

responsibility in civil defense. Courses offered during fiscal year 1966 included:

1. Civil Defense Management
2. Industrial Civil Defense Management
3. Advanced Civil Defense Management
4. Shelter Management Instructor
5. Civil Defense Planning and Operations (courses I, II, and III)
6. Radiological Monitoring for Instructors
7. Radiological Defense Officer
8. Community Shelter Planning (separate workshops for urban planners and local officials)

Special courses, seminars, and workshops were conducted in support of the Civil Defense Adult Education and University Extension Programs. Seminars were also conducted for U.S. Civil Defense Council personnel.

In accordance with contractual arrangements, the University of Tennessee developed and conducted the instruction in support of community shelter planning. (See *Community Shelter Planning* in part III.) Among the fiscal year 1966 Staff College graduates were 356 who completed the workshop courses in community shelter planning; 206 were urban planners and 150 local civil defense officials. Additional workshops and conferences for about 400 State officials were conducted at OCD regional offices. This work included training urban planners in community shelter planning and informing State and local civil defense personnel about this type of planning.

The University of Chicago, under contractual arrangements, furnished professional support and consultant services to the Staff College faculty. This included a 3-day seminar in programing instructional materials and a series of conferences on planning and evaluating instruction.

Other Staff College work included technical advice and assistance provided in development of training films for use in the Civil Defense Adult Education Program, the instruction of shelter managers, and the general training of local civil defense personnel. Training materials were developed for use by (1) labor organizations in conducting civil defense training conferences and (2) the U.S. Civil Defense Council in conducting regional conferences. Revised training materials were prepared for use in the Civil Defense University Extension Program and for instruction in civil defense management. Also, *Civil Defense Means Protection*, a correspondence course for State and local civil defense personnel, was field tested.

Civil Defense University Extension Program (CDUEP).—Operating through extension divisions of State universities and land-grant colleges, the CDUEP in fiscal year 1966 included contracts with 52 universities and colleges located in the 50 States, the District of Columbia, and Puerto Rico. During the year, 53,198 State and local

personnel participated in civil defense training administered through the CDUEP. This increased to 133,183 the total number of participants in this program since its inception in fiscal year 1963.

A total of 32,450 State and local officials and other community leaders were briefed on civil defense through 633 CDUEP conferences in fiscal year 1966. In 393 classes, 4,910 instructors were trained: 1,867 in shelter management and 3,043 in radiological monitoring. In addition, refresher training in radiological monitoring was given to 60 instructors in 6 classes.

Key staff personnel trained in civil defense management and in radiological defense during fiscal year 1966 totaled 4,055 in 297 classes: 2,960 in civil defense management and 1,095 as radiological defense officers. Other CDUEP training included 8,147 shelter managers trained in 442 classes and 3,576 radiological monitors trained in 212 classes.

Contracts negotiated in fiscal year 1966 provided for fiscal year 1967 CDUEP training at educational institutions in 49 States, the District of Columbia, and Puerto Rico. These contracts provided for 540 conferences for public officials, and 143 classes for shelter management instructors, 170 for radiological monitoring instructors, 391 for shelter managers, 211 in civil defense management, 151 for radiological defense officers, and 225 for radiological monitors. New features of these contracts are the addition of 119 classes in emergency operations simulation training for civil defense personnel and 97 conferences for business and industry.

The public, as well as State and local governments, derives many benefits from the CDUEP in addition to the work done under the contracts. For example, the wide dissemination of information on civil defense programs and capability has a cumulative and multiple effect in strengthening civil defense operations and in making officials and the public more responsive to emergency needs.

Radiological monitor training by the Army.—During fiscal year 1966, 4,535 radiological monitors were trained by the U.S. Continental Army Command (USCONARC). This increased to more than 15,000 the number of monitors trained by the USCONARC since contractual arrangements were first made for this training in April 1963. The training in fiscal year 1966 was conducted in 209 classes at 14 of the 25 Army posts qualified to perform this function.

These monitors are trained for State and local governments to help staff fixed radiological monitoring stations and public fallout shelters. Requests for the training originate at State and local levels and are directed into appropriate military channels by OCD regional offices. Training locations and schedules are later arranged by agreement between local civil defense officials and the Army post providing the training.

Administrators. One hundred fifty thousand copies were released for distribution to school and civil defense officials. The publication identifies the key facts to be considered by the school administrator in developing a disaster preparedness plan. It also furnishes him guidance on developing fallout shelter space for students and faculty and on action that should be taken to program its use as part of the community fallout shelter system.

Current Status of Civil Defense in Schools with Guidelines for Action, MP–35, was prepared for the OCD by the National Commission on Safety Education, NEA. A total of 100,000 copies of this publication was released for distribution to school and civil defense officials. The publication summarizes the findings of an OCD–NEA study of public school participation in civil defense. The study was conducted during the 1964–65 school year in accordance with OCD contractual arrangements.

Other work with educational organizations included the preparation and display of an exhibit *School Involvement in Civil Defense* at the annual convention of the National Education Association held in June 1966, at Miami, Fla.

Civil Defense Adult Education Program (CDAEP).—A total of 11,483 classes of the 12-hour *Personal and Family Survival* course were taught during fiscal year 1966. The number of persons who completed the course totaled 347,718, and 6,360 additional teachers were trained and certified to teach the course. This increased the total number of graduates, including teachers, to nearly 1.5 million. Classes were conducted in 47 States as well as in the District of Columbia and Puerto Rico. Individual participation in the course increased by 21 percent over that in fiscal year 1965. In addition, a course for radiological monitors (see *Professional and Technical Training* in part V) was also offered through the CDAEP.

The basic mission of the *Personal and Family Survival* course is to develop, within each adult, an understanding of the role in civil defense of the individual, family, and community. Through the CDAEP, this training can be made available in every community as part of the public school program. Operated through regular adult education channels and contractual arrangements with the U.S. Office of Education, the program provides civil defense instruction without cost to the students. Participating States are granted Federal funds to coordinate the program and train local teachers. State personnel assigned to the program are trained at the OCD Staff College; two seminars for this purpose were held in fiscal year 1966.

An adaptation of the *Personal and Family Survival* course for presentation on television was completed in accordance with contrac-

tual arrangements with the Louisiana State University and Agricultural and Mechanical College. A pilot test of the presentation was conducted over four Louisiana television stations: KALB–Alexandria, KNOE–Monroe, KATC–Lafayette, and WYES–New Orleans. The study materials were requested by 2,105 persons, and 110 of them submitted the number of assignments required for completion of the course. Further revisions and improvements in the course would be made before offering it again for presentation on television.

Medical Self-Help Training Program.—More than 1.7 million persons were trained in this program during fiscal year 1966. This increased to approximately 3.6 million the number reported by the U.S. Public Health Service (USPHS) to have completed this training since the nationwide program was started in fiscal year 1963. Including more than half a million additional persons informally exposed to medical self-help training through television and other media, an estimated 4.2 million have benefited from this training.

The Medical Self-Help Training Program is conducted for the OCD under a work order agreement with the USPHS. As developed for the OCD by the USPHS in cooperation with the American Medical Association, medical self-help training (see fig. 21) is designed to prepare individuals to meet civil defense emergency health needs in the absence of professional medical services. Persons with this training would be needed in public fallout shelters, particularly during postattack operations. They would also be helpful in the event of peacetime disaster. The USPHS has recommended that at least one member of every family be trained in medical self-help.

A major improvement during fiscal year 1966 was the acceptance by 45 States of the proposal to use Federal funds to finance the employment of a staff member at State level to manage the Medical Self-Help Training Program. Under this management, additional volunteer instructors were secured and more effective use was made of free instruction kits and student supplies. The number of classes conducted increased from 21,659 in fiscal year 1965 to 45,181 in fiscal year 1966, an increase of 108 percent.

The program, conducted by the USPHS for the OCD, continued to expand during fiscal year 1966. Medical self-help was taught in many schools of every State as well as in the District of Columbia and Puerto Rico. More television stations also presented the course. The Junior League, the National Federation of Business and Professional Women's Clubs, the Young Women's Christian Association, and other national organizations urged their members to take the course and especially recommended it to mothers and homemakers.

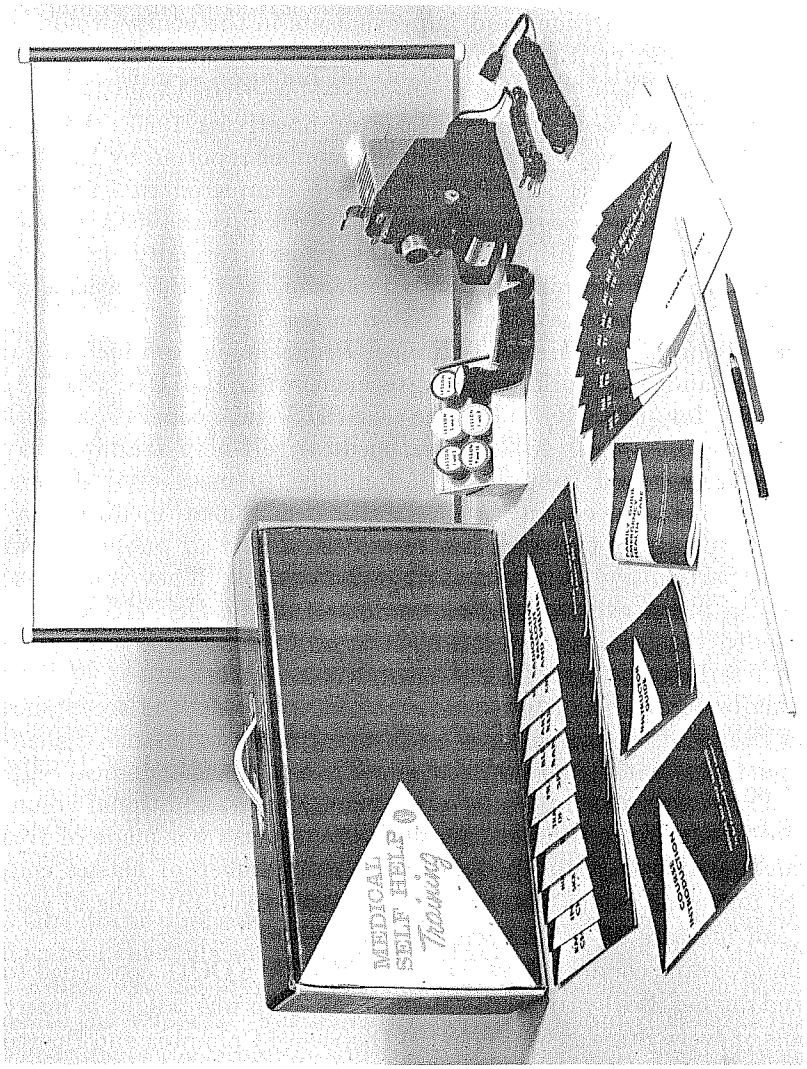


Figure 21.—Medical self-help training materials.

Rural Civil Defense

Since fiscal year 1963, the OCD has maintained contractual arrangements with the Field Extension Service of the U.S. Department of Agriculture (USDA) to conduct a special civil defense information and education program in rural areas and in cities of less than 10,000 population. During fiscal year 1966 this program featured rural civil defense information on more than 9,000 television and radio broadcasts, in more than 4,000 exhibits, and in 2.5 million copies of publications distributed in rural communities.

Approximately 57,000 leaders from rural communities participated in rural civil defense training and briefings. Subsequently, by working through Home Demonstration Clubs, 4–H Clubs, and other organizations in rural communities, these leaders helped bring civil defense information and education to approximately 1.1 million persons in fiscal year 1966. This increased to about 2 million the number of persons who have been informed of rural civil defense in this manner since this part of the program became operational in fiscal year 1965.

The rural civil defense information and education program conducted by the USDA has a potential audience of approximately 70 million people who live in rural areas and in communities of less than 10,000 population. Resources for carrying on the work include about 11,000 extension agents at the county level and about 3,200 agriculture specialists at the State level. Personnel supported by funds furnished the USDA under the contract included a small supervisory field liaison staff at the Federal level and a rural civil defense leader for each State.

Since most public fallout shelters are located in urban areas, this program is designed to inform people on farms and in small communities about the need for fallout protection and how to provide it. The protection of livestock and feed, water, and food products is given special attention. This includes evaluation of fallout protection available in farm buildings and recommendations for improving it. For example, eight USDA agricultural engineers assigned to State land-grant colleges provided guidance to county agents and others during fiscal year 1966. With the assistance of OCD personnel, these engineers revised procedures for conducting fallout shelter analysis workshops. Subsequently, 26 of these workshops were conducted in the field during the fiscal year.

Training Support Activities

The OCD continued the development and production of training materials to support standardized civil defense training and education activities.

Training materials developed and distributed included instructor guides, student manuals, training films, demonstration and simulation

equipment, and conference manuals. These, and materials made available during previous years, were widely used in the Civil Defense Adult Education and University Extension Programs as well as by State and local governments in conducting standard civil defense training.

During fiscal year 1966, contractual arrangements with the U.S. Army Pictorial Center resulted in completion of five training films in support of instruction in standard civil defense courses. Work on one training film was continued, and work on nine additional films was started.

Instructor guides and student manuals, prepared under contractual arrangements, were completed for use in courses to train auxiliary police and their instructors in civil defense. Course materials on emergency mass feeding were revised in cooperation with the American National Red Cross and the Department of Health, Education, and Welfare. The development of correspondence courses in civil defense was continued. The course *Civil Defense Means Protection* was ready for approval and printing at the end of fiscal year 1966.

Arrangements were made to procure 60 complete *Emergency Operations Simulation Training* (EOST) kits for use by the OCD Staff College and in the Civil Defense University Extension Program. The EOST kits include display boards and other material for training local officials in operating center procedures and techniques. This type of training will be featured widely during fiscal year 1967.

In accordance with contractual arrangements, the EOST materials were developed and tested for the OCD by the Systems Development Corporation. Results of EOSD projects (see *Emergency Operations Systems Development* under *Policy and Operational Guidance* in part V) had revealed the need for this training and produced criteria for developing the materials.

A total of 589 local officials in 16 selected communities—2 in each OCD region—participated in testing the EOST materials during fiscal year 1966. (See fig. 22.) In June 1966, a special demonstration was conducted to simulate the action of an emergency operating center during hurricane conditions.

During fiscal year 1966, the OCD continued to seek data and develop plans for integrating local civil defense training into various local training activities. The National League of Cities, under contractual arrangements, completed about 75 percent of the first part of a study that will provide the OCD with an inventory of approximately 4,300 municipal training courses and information on State and local laws and regulations concerning participation in these courses by local government employees and officials. Many of these courses are part of training programs made available to them by their local and State governments and by universities and national associations. Continuation of the study by the National League of Cities is designed to produce rec-

Figure 22.—Emergency operations simulation training underway.

ommendations and procedures for integrating civil defense training into these programs and to keep the potential trainees and the OCD currently informed as revisions are made in available training programs.

FINANCIAL ASSISTANCE

In accordance with the *Federal Civil Defense Act of 1950*, as amended, the OCD continued to provide Federal matching funds to States, territories, and possessions. Recipients of these funds met the OCD requirement that they submit program papers and semiannual reports showing specific objectives, activities, plans, and accomplishments of their civil defense operations. (See *Management Control* in part V.)

State and local governments in receipt of Federal financial and certain other assistance are also subject to compliance with the *Civil Rights Act of 1964*. Department of Defense and OCD regulations, as conditions for Federal financial and certain other assistance, accordingly require that each State furnish a *Statement of Compliance with Methods of Administration* and that each political subdivision submit an *Assurance of Compliance*. By June 30, 1966, the OCD had received these statements of compliance from all the States and the assurances from 6,500 political subdivisions.

During fiscal year 1966, approximately $8.5 million was obligated for civil defense supplies, equipment, training, and emergency operating centers. (See table 5.) About $4.5 million of this total was obligated for emergency operating centers (see *Protective Structures* in part III), and the remainder mainly for communications and warning equipment and for training activities.

Approximately $15.4 million was made available by the OCD to help State and local governments pay essential personnel and administrative expenses. During fiscal year 1966, all States, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam participated in this program. (See table 6.) State and local employment supported by these funds is required to be under a merit system satisfying Federal standards. The number of participating political subdivisions in fiscal year 1966 was about 9 percent greater than that of the preceding year. The number of State and local employees performing civil defense functions totaled 5,485, a slight increase since the end of fiscal year 1965.

TABLE 5.—*Fiscal year 1966 Federal contributions to State and local governments for supplies, equipment, training, and emergency operating centers*

Area	Amounts obligated [1]		
	Total	Supplies, equipment, and training	Emergency operating centers
Total	$8, 451, 351	$4, 002, 835	$4, 448, 516
REGION ONE	2, 407, 581	1, 082, 392	1, 325, 189
Connecticut	167, 831	135, 907	31, 924
Maine	100, 636	73, 191	27, 445
Massachusetts	325, 079	90, 742	234, 337
New Hampshire	29, 815	24, 483	5, 332
New Jersey	157, 836	102, 991	54, 845
New York	1, 568, 561	616, 397	952, 164
Rhode Island	14, 907	12, 256	2, 651
Vermont	20, 429	20, 120	309
Puerto Rico	21, 837	6, 305	15, 532
Virgin Islands	650	0	650
REGION TWO	786, 966	335, 542	451, 424
Delaware	44, 170	36, 001	8, 169
District of Columbia	22, 139	17, 869	4, 271
Kentucky	30, 267	28, 534	1, 733
Maryland	139, 916	49, 207	90, 709
Ohio	42, 595	34. 313	8, 282
Pennsylvania	294, 295	145, 971	148, 324
Virginia	130, 380	15, 080	115, 300
West Virginia	83, 204	8, 568	74, 636
REGION THREE	752, 319	347, 044	405, 275
Alabama	78, 537	61, 676	16, 861
Florida	363, 480	56, 358	307, 122
Georgia	108, 246	67, 505	40, 741
Mississippi	51, 241	38, 994	12, 247
North Carolina	38, 240	36, 179	2, 061
South Carolina	49, 229	32, 824	16, 405
Tennessee	63, 346	53, 508	9, 838
Canal Zone	0	0	0
REGION FOUR	1, 013, 151	509, 734	503, 417
Illinois	250, 369	124, 557	125, 812
Indiana	111, 776	23, 227	88, 549
Michigan	106, 430	62, 191	44, 239
Minnesota	246, 479	154, 090	92, 389
Wisconsin	298, 097	145, 670	152. 428
REGION FIVE	887, 481	371, 088	516, 393
Arkansas	225, 827	96, 765	129, 062
Louisiana	272, 813	48, 430	224, 383
New Mexico	31, 980	19, 063	12, 917
Oklahoma	166, 918	103, 529	63, 389
Texas	189, 943	103, 302	86, 642

See footnote at end of table.

TABLE 5.—*Fiscal year 1966 Federal contributions to State and local governments for supplies, equipment, training, and emergency operating centers*—Continued

Area	Amounts obligated [1]		
	Total	Supplies, equipment, and training	Emergency operating centers
REGION SIX	$1, 191, 296	$647, 518	$543, 778
Colorado	221, 708	128, 439	93, 269
Iowa	102, 610	93, 848	8, 762
Kansas	206, 715	107, 492	99, 223
Missouri	202, 593	148, 653	53, 940
Nebraska	171, 117	59, 688	111, 429
North Dakota	28, 695	24, 834	3, 861
South Dakota	157, 413	73, 938	83, 475
Wyoming	100, 445	10, 626	89, 819
REGION SEVEN	1, 207, 837	637, 463	570, 374
Arizona	114, 897	32, 237	82, 660
California	888, 441	469, 783	418, 658
Hawaii	89, 917	57, 796	32, 121
Nevada	71, 617	43, 172	28, 445
Utah	42, 740	34, 250	8, 490
American Samoa	0	0	0
Guam	225	225	0
REGION EIGHT	204, 719	72, 051	132, 668
Alaska	4, 780	4, 280	500
Idaho	56, 539	18, 782	37, 757
Montana	15, 265	10, 072	5, 193
Oregon	27, 391	7, 239	20, 152
Washington	100, 744	31, 678	69, 066

[1] Figures may not add to exact totals due to rounding.

The program for partial reimbursement of travel and per diem expenses of students attending OCD schools continued to encourage training of State and local civil defense personnel. Course completion certificates issued to students reimbursed under this program during fiscal year 1966 totaled 520, and the amount reimbursed was $34,512. Cumulative expenditures since this program was started in fiscal year 1960 totaled $647,673, and a total of 10,430 completion certificates had been issued.

TABLE 6.—*Fiscal year 1966 Federal contributions for civil defense personnel and administrative expenses*

Area	Amount obligated	Political subdivisions	
		Number participating	Staff
Total	$15, 413, 660	1, 639	5, 485
REGION ONE	4, 240, 914	246	1, 480
Connecticut	170, 396	15	63
Maine	223, 953	44	106
Massachusetts	539, 639	43	183
New Hampshire	67, 197	12	28
New Jersey	427, 400	43	166
New York	2, 472, 026	33	774
Rhode Island	117, 326	8	36
Vermont	47, 340	3	15
Puerto Rico	165, 540	45	105
Virgin Islands	10, 097	0	4
REGION TWO	1, 671, 694	165	611
Delaware	78, 138	4	31
District of Columbia	110, 011	0	26
Kentucky	165, 272	33	70
Maryland	355, 429	20	120
Ohio	242, 555	22	85
Pennsylvania	485, 000	48	190
Virginia	148, 998	20	55
West Virginia	86, 291	18	46
REGION THREE	2, 281, 619	320	913
Alabama	350, 500	52	128
Florida	503, 431	45	179
Georgia	481, 795	86	200
Mississippi	137, 352	33	79
North Carolina	398, 862	48	141
South Carolina	237, 953	32	104
Tennessee	171, 726	24	82
Canal Zone	0	0	0
REGION FOUR	1, 836, 993	301	685
Illinois	372, 394	57	142
Indiana	126, 712	18	52
Michigan	440, 523	62	129
Minnesota	443, 915	99	197
Wisconsin	453, 449	65	165
REGION FIVE	1, 024, 696	134	426
Arkansas	200, 575	32	83
Louisiana	287, 267	12	96
New Mexico	61, 586	5	21
Oklahoma	178, 268	32	82
Texas	297, 000	53	144

TABLE 6.—*Fiscal year 1966 Federal contributions for civil defense personnel and administrative expenses*—Continued

Area	Amount obligated	Political subdivisions	
		Number participating	Staff
REGION SIX	$995, 300	272	500
Colorado	135, 000	25	52
Iowa	134, 660	36	70
Kansas	142, 943	55	87
Missouri	180, 000	36	76
Nebraska	148, 565	27	71
North Dakota	112, 800	44	57
South Dakota	90, 300	31	57
Wyoming	51, 032	18	30
REGION SEVEN	2, 734, 988	114	619
Arizona	160, 668	16	57
California	2, 184, 111	77	464
Hawaii	178, 050	4	36
Nevada	125, 093	10	33
Utah	71, 898	7	24
American Samoa	0	0	0
Guam	15, 168	0	5
REGION EIGHT	627, 456	87	239
Alaska	119, 458	3	22
Idaho	72, 000	27	55
Montana	100, 000	28	46
Oregon	69, 355	12	28
Washington	266, 643	17	88

SURPLUS PROPERTY

During fiscal year 1966, the OCD continued the donation of Federal surplus property, as authorized by Public Law 655, 84th Congress, for use in any State or political subdivision for civil defense purposes. Since the program was started in fiscal year 1957, property having an acquisition value of approximately $347.4 million has been transferred to State and local governments. Federal surplus property with an original acquisition cost of $38.7 million was donated to State and local governments in fiscal year 1966. (See table 7.) Recipients of these property donations in fiscal year 1966 were required to submit the same type of program papers and reports as those required of recipients of Federal matching funds.

TABLE 7.—*Federal surplus property transferred to State and local governments for civil defense purposes*

[In thousands of dollars]

Area	Acquisition cost of transferred property [1]	
	Fiscal years 1957 through 1966	Fiscal year 1966
Total	$347, 364	$38, 693
REGION ONE	59, 637	6, 282
Connecticut	6, 343	540
Maine	8, 002	837
Massachusetts	15, 453	1, 226
New Hampshire	2, 688	231
New Jersey	11, 017	2, 049
New York	10, 169	893
Rhode Island	2, 607	235
Vermont	1, 051	146
Puerto Rico	2, 308	126
Virgin Islands	0	0
REGION TWO	30, 165	2, 295
Delaware	482	37
District of Columbia	0	0
Kentucky	3, 825	454
Maryland	5, 832	341
Ohio	4, 471	474
Pennsylvania	8, 822	537
Virginia	4, 850	208
West Virginia	1, 884	245
REGION THREE	74, 653	8, 585
Alabama	11, 473	1, 010
Florida	17, 895	1, 187
Georgia	16, 945	2, 363
Mississippi	9, 780	1, 920
North Carolina	10, 891	1, 095
South Carolina	3, 732	521
Tennessee	3, 937	489
Canal Zone	0	0
REGION FOUR	41, 917	5, 524
Illinois	11, 435	2, 031
Indiana	5, 330	253
Michigan	17, 710	2, 234
Minnesota	4, 812	824
Wisconsin	2, 630	182
REGION FIVE	42, 474	4, 404
Arkansas	6, 868	559
Louisiana	10, 473	1, 262
New Mexico	1, 194	119
Oklahoma	5, 518	503
Texas	18, 420	1, 961

See footnote at end of table.

TABLE 7.—*Federal surplus property transferred to State and local governments for civil defense purposes*—Continued

[In thousands of dollars]

Area	Acquisition cost of transferred property [1]	
	Fiscal years 1957 through 1966	Fiscal year 1966
REGION SIX	$23, 159	$2, 667
Colorado	5, 221	1, 076
Iowa	1, 971	400
Kansas	1, 763	168
Missouri	5, 304	353
Nebraska	1, 618	57
North Dakota	2, 136	230
South Dakota	2, 219	234
Wyoming	2, 226	149
REGION SEVEN	60, 913	7, 473
Arizona	2, 842	631
California	48, 977	5, 128
Hawaii	559	72
Nevada	2, 402	735
Utah	6, 132	906
REGION EIGHT	14, 446	1, 463
Alaska	1, 543	109
Idaho	2, 717	402
Montana	821	70
Oregon	2, 852	277
Washington	6, 513	606

[1] Figures may not add to exact totals due to rounding.

EMERGENCY SUPPLIES AND EQUIPMENT INVENTORY

Principal components of the emergency supplies and equipment inventory are forty-five 10-mile units of engineering equipment maintained by the OCD for local use to pump water during natural disaster or postattack operations. Total value of the inventory was approximately $7.5 million at the end of fiscal year 1966.

During the year engineering equipment was loaned to 24 States for use in 91 communities to help overcome drought or flood disasters. It included an aggregate of 158 pumps and approximately 114 miles of pipe. The heaviest usage was in the drought-stricken northeastern States and in midwestern States besieged by floods and storms. At the end of fiscal year 1966, the equipment was on loan to 12 States for use in 42 communities.

Emergency hospital and medical supply inventories for civil defense use are maintained by the Department of Health, Education, and Welfare in accordance with responsibilities outlined in Executive Order 10958, effective August 14, 1961.

Part VI

RESEARCH

For continued development of the national civil defense program on a sound basis, the OCD relies heavily upon information gained through research. Finding and evaluating alternative solutions to various civil defense problems is a major goal of this work. The net effect is a flow of information that is used to make decisions for planning and conducting the civil defense program. This information is also used to improve operational systems and to develop more economical hardware and more effective procedures for its use.

Contractual arrangements with government and private organizations are the principal means of carrying out OCD research. The substantial progress achieved during fiscal year 1966 is described in this report and reflects the care used in selecting potentially productive studies of greatest promise and contractors of proven competence. The percentage of funds committed to various research groups during fiscal year 1966 and the four preceding years was:

	Percent	
	Fiscal years 1962–65	*Fiscal year 1966*
Department of Defense (DOD)	19. 5	15. 3
Federal agencies exclusive of DOD	15. 6	11. 0
Educational institutions	8. 3	9. 0
Private organizations, including industrial laboratories, research institutes and foundations, and quasi-government agencies	56. 6	64. 7
Total	100. 0	100. 0

Functional categories.—The $10 million programed for research during fiscal year 1966 was distributed among projects conducted under four major functional categories of research and under management and support services. (See table 8.) These services, of a technical advisory nature, were obtained from lead laboratories under contract to assist in managing selected areas of research. The percentage of funds programed for major research categories and services was:

	Percent
Shelter	28. 1
Support sytems	21. 5
Postattack	20. 1
Systems evaluation	24. 5
Management and support services	5. 8
Total	100. 0

TABLE 8.—*Research funds programed, committed, and obligated, fiscal year 1966 appropriations*

Type of research (category and project)	Programed	Committed	Obligated
Total	[1] $10, 030, 000	$9, 877, 835	[2] $9, 002, 354
Shelter	2, 819, 000	2, 771, 273	2, 427, 192
Protection studies	1, 025, 000	995, 000	849, 681
Shelter environment	448, 000	447, 738	426, 809
Subsistence and habitability	217, 000	216, 440	216, 440
Component development	177, 000	177, 000	177, 000
Shelter management	410, 000	406, 455	406, 455
Shelter systems	542, 000	528, 640	350, 757
Support systems	2, 157, 000	2, 105, 433	2, 105, 433
Monitoring systems	165, 000	115, 000	115, 000
Communications and warning	320, 000	320, 000	320, 000
Reduction of vulnerability	130, 000	130, 000	130, 000
Emergency medical research	260, 000	260, 000	260, 000
Fire effects and protection	875, 000	875, 000	875, 000
Emergency operations	407, 000	405, 433	405, 433
Postattack	2, 012, 000	1, 964, 986	1, 797, 986
Radiological phenomena and effects	555, 000	555, 000	555, 000
Radiological countermeasures	415, 000	415, 000	415, 000
Repair, reclamation of damage	295, 000	295, 000	295, 000
Postattack medical, health, and welfare	240, 000	240, 000	240, 000
Recovery and maintenance systems	507, 000	459, 986	292, 986
Systems evaluation	2, 457, 000	2, 451, 143	2, 086, 743
CD systems analysis	1, 345, 000	1, 339, 975	1, 015, 575
Strategic analysis	90, 000	90, 000	90, 000
Vulnerability and requirements	405, 000	405, 000	405, 000
Organization and training	60, 000	60, 000	60, 000
Planning support	60, 000	60, 000	60, 000
Information systems analysis	50, 000	50, 000	50, 000
Physical environment studies	50, 000	50, 000	50, 000
Social and psychological	397, 000	396, 168	356, 168
Management and support	585, 000	585, 000	585, 000

[1] Consists of $10 million research and development appropriation and $30,000 reimbursable order received from the Office of Emergency Planning.

[2] An additional $1,267,357 was obligated in fiscal year 1966 from earlier appropriations for research and development projects approved in prior years.

Perspective.—The latest scientific research information applicable to planning and operating the civil defense program is obtained from each major research category. In addition, research in each functional category is designed to contribute data for the long-term exploration of potential advantages of possible alternative civil defense systems.

A major research effort, started in fiscal year 1965 and continued

during fiscal year 1966, is expected to provide guidance in setting future research requirements and priorities as well as to improve methods of analyzing attack effects and civil defense planning. This research includes detailed examination of hypothetical attack effects and effectiveness of civil defense countermeasures. Certain assumed attacks on five selected urban localities are used as a source of technical data that are accumulated through coordinated projects conducted in each of the four functional research categories.

SHELTER

Basic shelter research continued throughout fiscal year 1966 included study of protection provided by structures against the effects of nuclear attack and the development of improved methods of assessing the effectiveness of shelter protection. A major research effort was the study of environment in public fallout shelter and how to improve and control it. Closely related to this research were studies conducted on organization and management of shelter operations.

Recommended shelter ventilation criteria were developed for operational use in planning a prototype system of procurement and distribution of packaged ventilation kits. (See *Shelter Ventilation* in part III.) The technical data for these criteria were derived from studies of weather records, human reaction to elevated temperatures at high humidity levels, heat transfer mechanisms, and by analytical techniques applied to calculation of ventilation requirements. Specifications for production of the packaged ventilation kits were developed from those designed as research prototype models. Use of these kits would result in a substantial increase in the rated shelter capacity of many basement protected areas located in the National Fallout Shelter Survey, but limited in capacity by insufficient ventilation.

Research in radiation shielding resulted in the recommendation of improvements in methods of calculating the fallout protection provided by basements of residences. These recommendations were used effectively in conducting the Home Fallout Protection Survey. (See this subject in part III.)

The feasibility of improving methods used to evaluate possible damage to fallout shelters in nuclear attacks was indicated by testing building elements for blast resistance. A blast load simulator and applicable theoretical studies were used for this purpose.

A 400-person shelter occupancy test was conducted. This was larger than any test of this type previously conducted and resulted in several important findings. Use of the packaged ventilation kits led to suggestions that will increase the effectiveness of instructions issued to users of these units. The test confirmed that the need for formal

organization and management of shelter operations increases in proportion to shelter size. The test also demonstrated that effective shelter operation requires organization and decisive action immediately upon occupancy. As a result of these and earlier shelter test findings, prototype guidance materials were developed or revised for use in training shelter managers, planning the management of group shelters, and organizing and managing shelter operations.

SUPPORT SYSTEMS

Principal subjects of support systems research concern emergency operations before, during, and immediately after attack. Studies conducted during fiscal year 1966 included various aspects of warning, communications, radiological monitoring, management and control of emergency operations, vulnerability reduction, fire protection, and emergency medical care.

Research on radiological monitoring systems was focused on analyzing information requirements and evaluating and improving instruments currently in use. A project was started to evaluate the operational significance of fallout prediction and to investigate the feasibility of using an integrated data system of predicting fallout for civil defense operational purposes. Integrated into this system would be actual field data and data calculated from fallout prediction models. Work completed during fiscal year 1966 included the development of an automatic radiation monitoring system dependent upon the use of remote reading instruments. Documentation of fallout radiation energy distribution at an altitude range of 3 to 200 feet was also completed. Corresponding data for higher altitudes had been documented previously. This information is needed in converting aerial radiological monitoring data to data applicable at ground level.

Continued analyses of emergency communications and warning requirements were focused primarily upon the vulnerability and reliability of communication systems and upon the improvement of warning systems in relation to the existing and future shelter programs. Feasibility and cost analyses were also conducted to evaluate current and proposed methods and precedures of other countermeasures.

Damage limitation studies of the petroleum, petrochemical, and steel industries indicated that rapid shutdown techniques can reduce danger to operating personnel and prevent damage or destruction to industrial plants as the result of continuing operations during nuclear attack. Further research in vulnerability reduction confirmed the benefit of providing temporary shelters along the routes to designated shelter areas; this would reduce the number of casualties, should movement to shelter or relocation be necessary in the presence of radioactive fallout. Further analysis of urban development confirmed that reduction in vulnerability is achieved by organized dispersal of the population

into growing and expanding urban areas, and indicated that the additional cost, mainly that of transportation, is economically feasible.

Initial research on emergency operating centers indicated the need for improved visual and mechanical aids to supply resource estimates required to make decisions during emergency operations. Studies of disaster operations, dealing with the effects of tornadoes, floods, riots, and hurricanes, appreciably expanded the understanding and knowledge of organizations operating under disaster conditions.

Emergency medical research included studies of austere treatment of burns, traumas, radiation sickness, and other injuries. The effects of prolonged exposure to radiation and the value and feasibility of providing partial body shielding against it were also studied. Work on developing a physiological means of measuring human exposure to radiation was continued.

To provide information designed to help improve civil defense planning, preliminary research was started on analysis of firefighting methods. Investigation of mass fire phenomena was continued by observation of instrumented large-scale fire tests.

A prototype design of a system using solid-fuel smoke generators was developed to provide interim protection from thermal radiation. Other research on attenuation of thermal radiation showed that production of smoke from liquid hydrocarbons can be increased greatly by addition of small amounts of catalysts.

POSTATTACK

Sustaining the population that would survive nuclear attack and providing emergency measures for restoring vital services and facilities are the principal subjects of postattack research. During fiscal year 1966, greater attention was focused on problems of organizing and managing postattack survival and recovery operations. Closer working relationships were developed with the research staff of the Office of Emergency Planning (OEP); several research contracts were sponsored jointly by the OCD and OEP and received joint technical direction from them.

Hypothetical attack data and improved models for the study of radioactive fallout were used to reevaluate the contamination of food and water by radioactive fallout. Results of this research showed that earlier estimates of the importance of this hazard had been unrealistically severe. More realistic recommendations on the emphasis of food and water contamination from external radiation were made accordingly. With minor revisions, these recommendations were accepted and endorsed by the Civil Defense Scientific Working Party of the North Atlantic Treaty Organization at its meeting in May 1966. (See *International Activities* in Part VII.)

However, new data indicated that growing crops and plants in general may be more severely damaged by radioactive fallout than had previously been believed. The foliage of many species of plants, including that of important food crops, was found to retain appreciable quantities of radioactive fallout, making the plants subject to more damage than previously estimated. The significance of the increased crop damage will need to be established.

A study of the petroleum industry was completed. Designed to identify the critical components within this industry and repair requirements associated with various degrees of damage, this was the fifth in a series of critical industry studies. The others in the series included an analysis of the food, power, steel, and water industries. In addition, under contractual arrangement with the American Waterworks Association, a manual *Civil Defense Aspects of Waterworks Operation* was prepared for printing and nationwide distribution.

SYSTEMS EVALUATION

Evaluation of systems that would decrease loss of life and property and increase the capability to recover from enemy attack are the subjects of this type of research. It is designed to identify more precisely and objectively the elements to be considered in selecting alternative civil defense systems.

The development of more effective techniques for local and nationwide evaluation of civil defense systems was continued. For example, use of the new Analytical Nuclear Casualty Estimating Technique (ANCET) computer program decreased from hours to minutes the time required to estimate the number of casualties anticipated as the result of various hypothetical attack patterns. Consequently, analysis of the effects of variations in attack patterns can be performed more efficiently. The application of improved techniques of this type made possible the production of more reliable estimates of feasibility, effectiveness, and cost of civil defense systems at all levels of government. In the light of various possible attack patterns and alternative countermeasures, the improved techniques also made possible a more effective base for planning and evaluating civil defense development and operations.

Studies in systems evaluation during fiscal year 1966 were being focused more intensely upon civil defense measures oriented to a period of crisis buildup. Earlier studies were centered more intensely upon civil defense measures designed to deal mostly with surprise attack. New evaluations of developments in weaponry, strategic doctrine, and defensive and offensive capabilities have led to this change in emphasis. Continued projection of future strategic situations made these evaluations possible by identifying the interaction of civil defense with military defense in future national strategy.

Continued study improved the capability of assessing the vulnerability of the population in various areas as well as that of utility, economic, political, and cultural systems under various conditions of attack. New studies conducted during fiscal year 1966 covered gas, electrical, and water supply systems. By the end of the fiscal year, the first report was being completed on a method designed to assess the total vulnerability of people, institutions, and other resources of the United States. A better understanding of civil defense performance requirements can be expected as a result of these studies.

Public attitude surveys indicated that 75 percent of the population reacted favorably toward civil defense as they understood the program during fiscal year 1966. Research activities continued to improve techniques for developing data and methods to predict public acceptance of civil defense and the constraints on the civil defense program that accompany the attitude of the public. Additional studies were started to gain more precise information on the constraints that alternative organization patterns and their associated training requirements would impose upon the civil defense program.

Part VII

SUPPORTING ACTIVITIES

The general public and local communities, as well as industry and labor, and national organizations, are among the important participants in the civil defense program. The support of national and community organizations and resources and the efforts of individual citizens are needed to develop and maintain effective civil defense capabilities of Federal, State, and local governments. Major activities that help to achieve the required understanding and support, by providing a realistic perspective of civil defense in the light of local, nationwide, and worldwide developments, are discussed in this part of the report.

PUBLIC INFORMATION

Top public information priorities throughout fiscal year 1966 were (1) the development of plans and preparations to deliver authoritative information to the public in the event of nuclear attack and (2) the development of maximum effective community support for civil defense. Closely associated with these priorities was the continuing basic effort to keep the public informed of the current civil defense program by describing its functions and accomplishments as well as future goals.

Emergency Information

Providing the public with authoritative information in times of emergency would require coordinated action of Federal, State, and local governments. Basic plans call for use of NACOM 1 or NACOM 2 and the EBS (see *Communications* in part IV) for this purpose, but other means and systems would also be used, as practicable. Experience in disseminating information during major disasters proved helpful to civil defense information personnel at the OCD as well as at State and local offices. Prime examples were the information activities conducted during Hurricane Betsy in September and the Northeast Power Blackout in November 1965.

Informational support of Community Shelter Planning (CSP) (see part III) projects conducted during fiscal year 1966 provided opportunities for improving emergency information procedures. This included the development of techniques for informing the public of each CSP area of the nature and importance of the project and the preparation of detailed informational and instructional materials as part of

the community civil defense plan. In the light of this experience, a task force was established in June 1966 to define procedures for channeling OCD information support to CSP areas.

In support of the Home Fallout Protection Survey (HFPS) in Rhode Island (see part III), the OCD assisted State and local officials in launching and publicizing the project to gain public support. This provided additional opportunities for acquainting the public with emergency survival information. Plans call for similar assistance to other States as the HFPS is extended.

In accordance with OCD contractual arrangements, the U.S. Civil Defense Council developed a pilot emergency information workshop to help local civil defense directors strengthen their emergency information capabilities. The workshop included a seminar that gave local civil defense directors an opportunity to assess available public information resources and determine how best to use these resources in providing the public with emergency lifesaving information during a crisis period.

Community Services

The OCD continued to develop policies, activities, and program materials designed to gain maximum support for civil defense at the community level. An OCD objective is to facilitate the identification of community resources that can be made available for civil defense through the efforts of Federal, State, and local governments as well as through nongovernmental agencies and organizations.

During fiscal year 1966, the OCD placed increased emphasis on providing guidance for community organizations in developing and applying their resources to support civil defense, especially in community shelter planning. The OCD maintained liaison with Federal officials and agencies for this purpose and worked with selected agencies, associations, and organizations to achieve and maintain their voluntary support. Through contractual arrangements, the OCD utilized scientific advisory services, including program analysis, to help develop effective community support and to identify ways and means of strengthening community involvement in the support of civil defense.

Guidance for community organizations and local governments on the use of available resources for civil defense was provided in a series of publications started in fiscal year 1964. *Committees for Community Shelter Planning*, H–11–B, was added to this series in fiscal year 1966. It is designed to help civil defense directors in Community Shelter Planning areas to organize and work with two required elements of their organizations: Community Shelter Planning Policy Councils and Technical Advisory Committees. Another addition to this service was Volume 3 of *Meetings That Move*, H–11–3. It in-

cludes information on warning, emergency communications, and emergency operating centers, and a section on communicating ideas. Volumes 1 and 2 of the same title were published in fiscal year 1965 and cover the use of workshops and related activities to enlist support of community organizations.

Other publications in this series are: *Community and Family Service for Civil Defense*, H–11, and *Community Involvement in Civil Defense*, H–11–A. More than 500,000 copies of publications in this series were distributed during fiscal year 1966, making a cumulative total of nearly 1.4 million.

The OCD also provided national organizations and Federal agencies with policy guidance and coordination on matters concerning emergency welfare. This included participation in the policy review and development of eight field guidance manuals and other publications involving community relations.

Supporting Materials

In addition to the series of publications described in the preceding section of this report, other issuances of published materials were made through State and local governments. OCD Information Bulletins were used to transmit statements on civil defense and related military defense policy. About 1,700 letters from the public were answered. Most of them pertained to fallout shelter and requested published material. In addition, articles on civil defense were prepared or reviewed editorially for publication in newspapers, magazines, and encyclopedias. Additional public information activities are discussed in the following paragraphs.

Motion pictures.—Four new motion pictures were released during fiscal year 1966. *The A+ School* is the first motion picture featuring the incorporation of slanting techniques in the design and construction of a building. *Memorandum to Industry* is the major OCD motion picture documentary on the civil defense preparation of industry. *The Face of Disaster* shows how community welfare services were helpful during major disasters such as the Alaskan earthquake of 1964 and the 37 tornadoes which struck in the Midwest on Palm Sunday, 1965. *The Five Days of Betsy* includes on-the-scene coverage of disaster operations associated with one of the most devastating hurricanes experienced in a decade.

The Army Pictorial Center reported that 14,425 requests were received for OCD motion pictures during fiscal year 1966. Of 3,780 military and civilian films, the OCD film *About Fallout* was 31st in the number of showings requested; the OCD film *One Week in October* was 40th. Three OCD motion pictures were reproduced on 8-millimeter film to accommodate usage with major OCD exhibits in four cities and at numerous conventions and conferences. Through the

U.S. Information Agency and military attaches, many OCD films were supplied to foreign governments.

Radio and television.—During fiscal year 1966, the weekly civil defense series *Stars for Defense* had an estimated audience of 18.6 million persons. This estimate was based on a sampling survey of 100 selected radio stations throughout the 50 States. As a result of the survey, 101 additional stations requested the series, and a net number of approximately 2,200 local commercial and educational radio stations carried the program during the fiscal year. This included almost half of the radio stations in the Nation, and *Stars for Defense* remained the most popular radio series offered by a Government agency. The American Broadcasting Company and the Columbia Broadcasting System networks continued regularly to use the series *Entertainment U.S.A.* and *Startime U.S.A.* The three programs were broadcast in an entertainment-civil defense information format.

In August 1965, 12 spot announcements were released to more than 5,000 radio stations. Extensive use of these transcripts was indicated by frequent replacement requests. Subjects covered by these announcements included the Emergency Broadcast System (EBS), public fallout shelters, shelter signs, school shelters, warning, slanting techniques, and natural disasters.

Two new television spot announcement kits were completed during fiscal year 1966. One, containing a 16-millimeter color film on the EBS, was released to 750 television stations in January 1966. The other kit, containing a similar film *Warning Signal*, was ready for distribution early in fiscal year 1967.

Exhibits and posters.—An estimated 25 million persons saw OCD exhibits during fiscal year 1966. Exhibits were displayed at 660 locations. This included displays at conventions of national organizations, as well as at the California Museum of Science and Industry in Los Angeles, the San Diego Museum of Natural History in San Diego, Calif., and the Museum of Arts and Sciences in Macon, Ga. At the end of fiscal year 1966, the *Science for Survival* exhibit continued to be shown at the former site of the Seattle World's Fair, Seattle Center, where it was relocated at the close of the New York World's Fair in October 1965.

A new exhibit *Adapting to Living in the Nuclear Age* was started on a nationwide tour in a 35-foot trailer, as arranged in cooperation with the Army Exhibit Unit. OCD exhibits also remained on display at nine major airports at the end of the fiscal year. (See fig. 23.)

Four major new exhibits—20-foot displays—were produced during fiscal year 1966 for use at national organization conferences and conventions, as well as at State and county fairs. These exhibits featured individual subjects as described by their titles: *Civil Defense Emergency Operations*, *Build a Fallout Protected School*, *School Involve-*

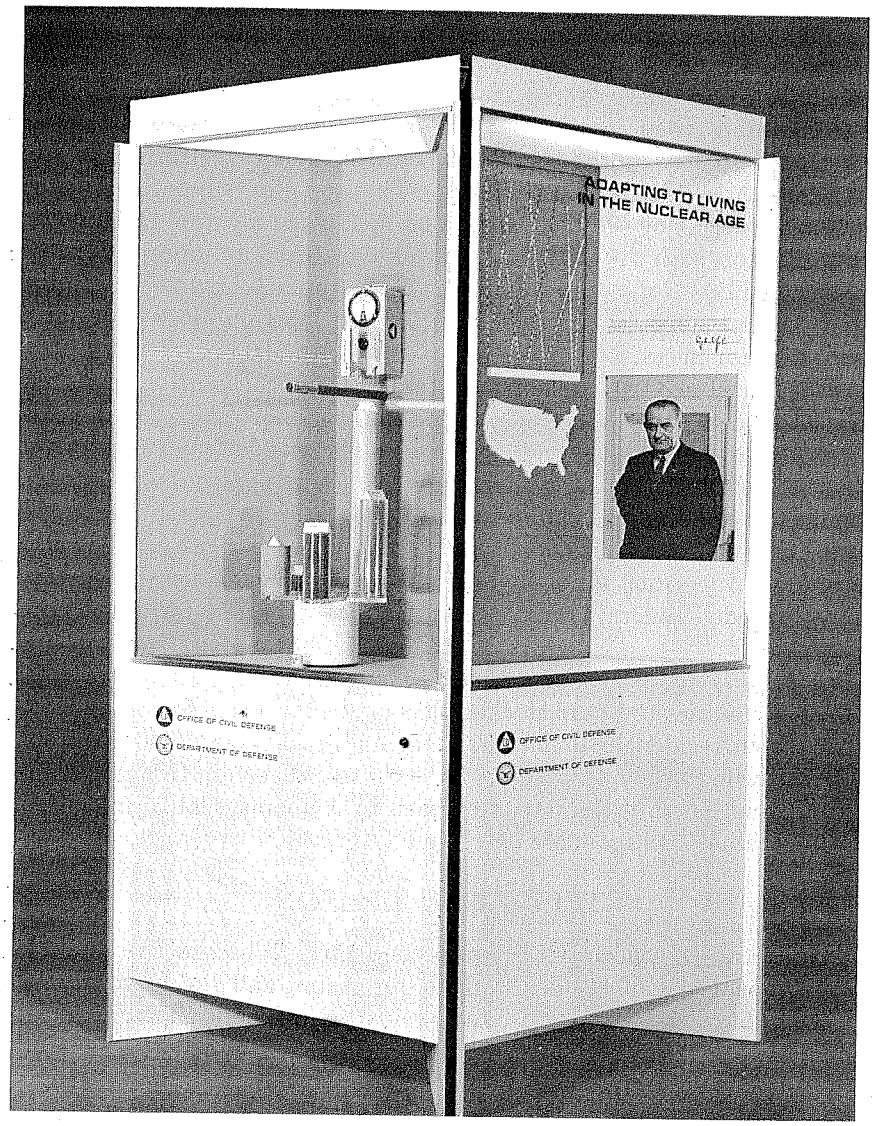


Figure 23.—*Adapting To Living in the Nuclear Age* civil defense exhibit at major airports.

ment in Civil Defense, and *Dual-Use Fallout Shelters in Industrial Construction.*

About 30,000 reproductions each of two table-top exhibits featuring shelters in schools and construction of fallout protected schools were distributed to local civil defense directors. Information kits containing the filmstrip *New Techniques to Create Fallout Shelter* were also distributed to them. State, local, and OCD regional offices, having

previously been equipped with polarized-light display cases, were furnished with additional posters suitable for this type of exhibition. About 1,000 of these posters were distributed.

An exhibit titled *Meeting the Needs of People in Emergencies* was developed jointly by the OCD and the Emergency Welfare Services, Welfare Administration, DHEW. This was in support of civil defense emergency welfare programs conducted by the DHEW in coordination with the OCD. The exhibit featured a 9-minute film on Hurricane Betsy of September 1965. Table-top displays of the exhibit were produced and distributed to State and local public welfare and civil defense offices.

The transit advertising industry for the third consecutive year continued to donate display space in public transportation vehicles for civil defense posters. (See fig. 24.) Courses offered locally in medical self-help, radiological monitoring, and personal and family survival were featured. In response to OCD information letters, 75 transit advertisers and their subsidiaries ordered more than 26,000 posters in June 1966 for use in display space valued at nearly $63,000. This exceeded the value of the entire space donation for fiscal year 1965.

Distinguished Service Citations.—These citations were awarded to cities or counties that had stocked fallout shelter space for all or more than their resident population. During fiscal year 1966, citations were awarded to 13 communities in 10 States: 2 each in Georgia, Minnesota, and North Carolina, and 1 each in Alabama, California, Kentucky, Maine, Michigan, Missouri, and Tennessee.

TECHNICAL LIAISON

Technical liaison activities were conducted to assure the realistic development of OCD policies, plans, programs, and executive actions in the light of current technical and scientific concepts. This included correlating operational requirements and research activities in civil defense as well as relating research findings to operational elements in the civil defense program.

Guiding and monitoring the civil defense activities of the National Academy of Sciences–National Research Council were highly significant. During fiscal year 1966, its Advisory Committee on Civil Defense and related subcommittees were reorganized to encourage increased activity.

Results of technical review and analysis of potential problem areas in OCD program elements provided guidance for directing operations more efficiently and effectively. This liaison activity was conducted mainly through ad hoc committees staffed by personnel from the organizational components primarily responsible for the program element involved.

245-764 O - 67 - 8

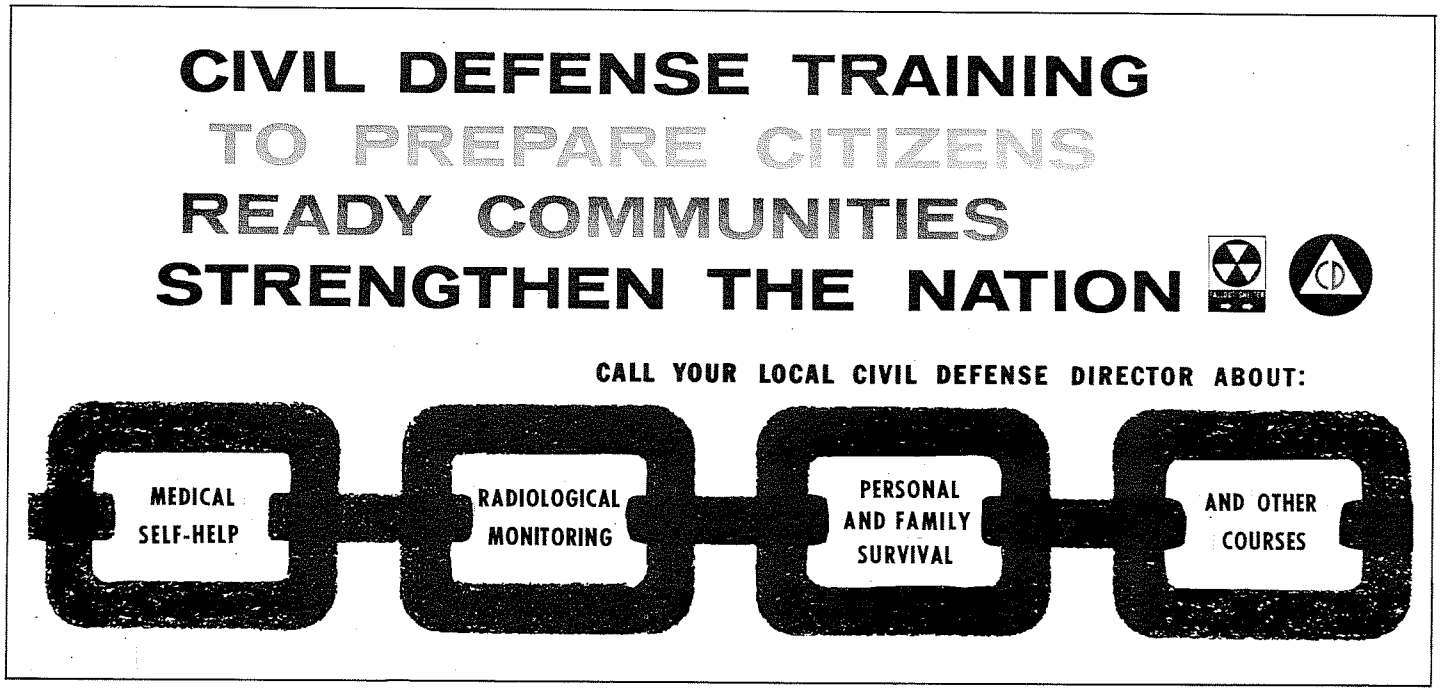


Figure 24.—Poster or transit advertising card featuring civil defense.

INDUSTRIAL PARTICIPATION

Through industrial participtaion activities, the OCD continued to furnish managers of industrial and commercial enterprises with information and guidance on civil defense preparations in their facilities. Preparations for the protection of life and property during civil defense emergencies included those designed to (1) protect industrial personnel and facilities, (2) preserve production or service capabilities, and (3) assist the local government or community in its civil defense efforts.

The OCD worked in liaison with Federal agencies and industry to help business and commercial establishments achieve these objectives. The fiscal year 1966 pattern of operations, similar to that followed in recent years, resulted in increased development and dissemination of industrial civil defense information. Conferences, seminars, and other training activities were widely used to guide and instruct industial leaders in civil defense. Liaison with home offices of multiplant firms helped to expand and strengthen the nationwide public fallout shelter system.

The OCD provided leadership and guidance to 21 Federal agencies that have been assigned responsibilities by Executive orders for promoting industrial facility preparedness programs. This included coordination of their civil defense publications and assurance that their activities were in consonance with OCD plans. Industrial civil defense guidance materials were disseminated through Department of Defense (DOD) components that work with industrial firms in the DOD industrial defense program.

Federal agencies, with OCD encouragement and assistance, continued to develop and disseminate civil defense information and guidance materials adapted to the needs of those industries with which they conduct business regularly. Many business and industrial firms continued to publish civil defense information in their magazines and other news media. Information on personal and family survival was also distributed to many employees through these media.

Informational guidance activities.—Publications, motion pictures, and exhibits were widely used to disseminate civil defense information during fiscal year 1966. Approximately 400,000 copies of civil defense publications applicable to business and industry were distributed through Federal agencies, State and local civil defense offices, business and industrial firms, and national professional and trade associations. Included among 40 publications made available nationwide in this manner were technical publications prepared by the OCD and others prepared by various Federal agencies as well as by business and industry.

An important new publication *Iron and Steel—Industrial Defense Planning* was distributed in fiscal year 1966. About 62,000 copies were sent mainly to managers of iron and steel facilities. The 35-page booklet was prepared by the American Iron and Steel Institute in cooperation with the Department of Commerce, Business and Defense Services Administration, and the OCD. Replacing a similar booklet issued in 1954, the publication provides guidance on preparations that the iron and steel industry should make to protect life and property and to restore facilities and production in the event of nuclear attack.

Another important publication distributed for the first time was *Civil Defense Preparedness in the Electric Power Industry.* The Defense Electric Power Administration of the Department of the Interior prepared this 120-page publication in cooperation with the OCD, and more than 30,000 copies were sent to electric power facilities. It provides guidance for the electric power industry on civil defense planning and preparedness as well as Government organization and plans for protection and restoration of the industry.

The documentary motion picture film *Memorandum to Industry* was completed for use by local civil defense directors and industrial civil defense coordinators. It illustrates civil defense preparations that are being made by some nationally known firms. Motion pictures under preparation at the end of fiscal year 1966 included films on the application of civil defense measures to the oil and gas, food, and electric power industries as well as to port facilities and Federal buildings.

About 27,000 reproductions of a table-top exhibit *Industry Prepares For Emergency Operations* were produced and distributed. Its four-color display panels feature a company civil defense plan and skills such as fire control, shelter management, and first aid. Other features include self-protection measures and orderly shutdown as well as mutual aid, warning, and government-industry cooperation. An additional 15,000 reproductions of the exhibit *Industrial Civil Defense*, produced in fiscal year 1965, were also distributed.

Training activities.—During fiscal year 1966, approximately 5,600 business, professional, and civic leaders obtained civil defense guidance and information through conferences, seminars, and training sessions conducted primarily for civil defense purposes. These included three classes in industrial civil defense management offered at OCD schools and conferences and seminars conducted by 25 State and local governments in 16 cities. Sponsors of the conferences and seminar meetings included professional and civic organizations nationwide. The OCD staff assisted the sponsors of these activities by providing civil defense information and guidance materials or by participating directly as keynote speakers or panel moderators.

The OCD continued to work with major national organizations in disseminating civil defense information and guidance materials to industry. Among them were the U.S. Civil Defense Council, the Chamber of Commerce of the United States, the National Association of Manufacturers, the American Society of Association Executives, the Millers National Federation, the American Iron and Steel Institute, the Association of Land-Grant Colleges and Universities, and the American Society for Industrial Security.

More than 7,000 senior military officers and key civilian leaders, who attended national security seminars conducted by the Industrial College of the Armed Forces in 13 cities, obtained civil defense material provided by the OCD. Courses conducted for executives in government and industry by the U.S. Army Military Police School, Fort Gordon, Ga., continued to provide civil defense guidance materials.

Shelter development.—The OCD conducted negotiations with more than 100 multiplant firms to encourage them to adopt corporate fallout shelter policies favorable to expanding and strengthening the nationwide public fallout shelter system. Through direct liaison with business and industrial firms, the OCD thus sought more universal application of the concept that company divisions and subsidiaries be authorized to license facilities for use as public fallout shelters and to include dual-use shelters in new construction.

All liaison activities with industry, as well as conferences and seminars, presented the nationwide fallout shelter system as the core of a balanced civil defense program. During fiscal year 1966, major firms in most categories of industry and business continued to cooperate with the OCD in these activities. Consequently, licensed public fallout shelter space in industrial establishments was increased, as was also the inclusion of dual-use shelters in new or modified construction.

LABOR SUPPORT

Labor and trade unions continued their enthusiastic support of the civil defense program throughout fiscal year 1966. This was evidenced by resolutions adopted at conventions and space afforded civil defense in labor newspapers. It was also evidenced by nationwide participation in special civil defense training courses and by performance at the scene of natural disasters. In response to OCD liaison with labor and trade unions, these organizations also helped disseminate civil defense information on several important occasions.

Supporting resolutions.—The American Federation of Labor and Congress of Industrial Organizations (AFL–CIO) reaffirmed support of the civil defense program. On December 14, 1965, the Sixth Constitutional Convention of the AFL–CIO Council adopted Resolution No. 186, *Civil Defense and Emergency Planning.* (See app. 5.)

During sessions of the convention at San Francisco, Calif., December 1–5, 1965, the OCD liaison representative presented the message on civil defense to 3,200 labor leaders. This included many oral as well as written presentations to separate groups; e.g., 600 delegates of the Building and Construction Trades Department, AFL–CIO, 400 delegates of the International Labor Press Association of America, 400 delegates of the Maritime Trades Department, AFL–CIO, and 350 members of the State, County, and Local Central Labor Councils, AFL–CIO. This audience included delegates from Canada and all parts of the United States.

The New Hampshire State AFL–CIO, the West Virginia State AFL–CIO, and the New Jersey State Building and Construction Trades Department of the AFL–CIO also adopted resolutions in support of civil defense during fiscal year 1966.

Labor press.—Labor periodicals and newspapers carried announcements of the new OCD training courses available to AFL–CIO or independent unions for their leadership groups, and many requests for these courses were received. These announcements were carried in the monthly journal of the Building and Construction Trades, sent to 3.5 million members, and in the *AFL–CIO News*, mailed to 85,000 key labor officials. The International Labor Press Association of America also sent the announcement to 500 major international, national, State, and local papers.

Training participation.—Many labor organizations and leadership groups throughout 17 States completed the 1¼-hour course *Labor's Supporting Role in State, County, and Local Civil Defense.* Based on a questionnaire survey of 3,100 key labor leaders who participated in the course, revised course material was prepared by the OCD for use when the original supply has been exhausted. In addition, a leadership briefing guide was prepared for issuance to all who participate in labor civil defense courses, seminars, or educational programs. Also, a self-instruction civil defense manual was prepared for use by labor personnel and is made available to them by those who complete leadership group training. This greatly accelerated training participation.

Several leadership groups completed the 1¼-hour course *Labor and the Postal Worker in Civil Defense.* Included were more than 400 members of the United Federation of Postal Workers, AFL–CIO, and more than 100 labor leaders completed it under sponsorship of the Washington State Federation of Postal Clerks, AFL–CIO.

At the end of fiscal year 1966, plans were under consideration for offering the 3-hour course *Labor's Supporting Role in National, State, and Local Civil Defense* at Labor Extension Divisions of the Universities of California, Minnesota, Missouri, and Ohio. In Puerto Rico, 200 labor leaders completed the course. Interest in civil defense

courses for labor was also indicated by correspondence from Australia, Canada, England, and West Germany.

The Labor Advisory Committee of the Office of Emergency Planning was briefed on the OCD training program for labor organizations. The Committee, with Mr. William F. Schnitzler, Secretary-Treasurer of the AFL–CIO, as permanent chairman, included nine outstanding labor leaders, each representing an international union. In many areas the AFL–CIO Community Services Organization sponsored the training and participated effectively in conducting it.

Disaster operations.—Labor organizations supplied free manpower and technical skill to alleviate disaster conditions in many sections of the Nation. Participation in disaster operations following Hurricane Betsy in September 1965 was an outstanding example. In the devastated areas of Louisiana and neighboring regions, more than 3,000 union members provided volunteer emergency help. Many labor organizations made their union halls available for emergency use. Financial donations in support of disaster victims totaled more than $140,000. The effectiveness of the emergency assistance was enhanced by the mutual efforts of the American National Red Cross and the AFL–CIO.

Informational activities.—At the AFL–CIO Union–Industry Show, Baltimore, Md., April 29–May 4, 1966, OCD exhibit and program material was displayed to an audience of 203,000 people. More than 85,000 copies of civil defense educational material were distributed. This was the 11th consecutive year that civil defense was featured at this show, held annually at a major city.

The AFL–CIO Public Relations Department featured civil defense in a program that was broadcast over 16 major radio stations of the American Broadcasting Company network. Titled *As We See It*, the program included an interview with the Director of Civil Defense who discussed civil defense progress and labor's participation in it. Copies of the presentation were also made available to news media.

INTERNATIONAL ACTIVITIES

International activities of the OCD were conducted in cooperation with the Department of State. Mostly concerned with planning and exchange of information, these activities were conducted principally through the North Atlantic Treaty Organization (NATO), the Central Treaty Organization (CENTO), and the United States/Canada Joint Civil Emergency Planning Committee (JCEPC).

The OCD represented the United States at meetings of the NATO Civil Defense Committee in September 1965 and June 1966, and at the meeting of the Scientific Working Party that convened in May 1966. The OCD also assisted the Department of State in preparation of

United States position papers for use at meetings of the NATO Senior Civil Emergency Planning Committee and its working party. In conjunction with their attendance at NATO meetings, OCD representatives observed civil defense operations and techniques in Denmark, Great Britain, Italy, Norway, and Sweden.

Arrangements with several western European countries were made for them to brief an OCD contractor and the Civil Defense Director of Massachusetts on civil defense. An OCD representative also attended the meeting of the International Good Neighbor Council at Monterrey, Mexico, in April 1966.

The OCD participated in a meeting of the United States/Canada JCEPC at Ottawa, Canada, in June 1966. Other activities during the year were carried on through subcommittees of the JCEPC. For example, the Joint Regional Continuing Committee (JRCC) met at Quebec City, Canada, in October 1965, and at Chicago, Ill., in April 1966. In June 1966, the JRCC was dissolved, since its mission was accomplished. At the same time, the JCEPC established a Regional Civil Emergency Advisory Committee to deal with emergency planning problems affecting adjoining local governments in both countries and to encourage local joint planning through U.S. and Canadian regional civil defense offices. Another subcommittee of the JCEPC, the Emergency Resources Planning Committee, met at Washington, D.C., in May 1966.

The Civil Defense Directors of Canada, Denmark, Israel, and Jordan were among the 53 foreign officials that visited the OCD during fiscal year 1966. Other visiting civil defense officials were from Argentina, Australia, Great Britain, Canada, Columbia, Denmark, Finland, France, West Germany, Iran, Israel, Mexico, Norway, Sweden, Thailand, Venezuela, and Yugoslavia.

In connection with their OCD visits, the Civil Defense Director of Jordan and officials from Canada, Iran, and Venezuela also studied at the OCD Staff College, as did eight students from other countries. In addition, a group of 14 journalists from West Germany came to study the U.S. civil defense program. Many architects and engineers also came from foreign countries to study nuclear defense design at summer institutes and to take the course in fallout shelter analysis. (See *Professional Support of Architects and Engineers* in part III.)

NATO and CENTO member countries were supplied with OCD Information Bulletins and technical publications as well as the OCD annual report for fiscal year 1965. In response to a total of 403 requests, certain OCD publications were sent to 53 countries. Four new OCD motion picture films were furnished to headquarters of NATO and CENTO for loan to member nations. In addition, a total of 31 requests to borrow or purchase OCD motion picture films were

received from 13 countries. Under international arrangements for exchange of equipment, the OCD loaned sample radiological instruments to Iran for testing and evaluation purposes.

THE AMERICAN NATIONAL RED CROSS

The services of the American National Red Cross (ANRC) were available to the OCD in both advisory and operational capacities. Under continued contractual arrangements, the ANRC provided an advisor at each OCD regional office. As customary, the ANRC assigned a liaison representative to assist the Office of the Director of Civil Defense. The ANRC also continued to provide fallout shelter space in its buildings and encouraged its local chapters to do the same. This was in consonance with the memorandum of understanding of August 15, 1962.

During fiscal year 1966, the ANRC cooperated with the OCD and the Department of Health, Education, and Welfare in revising the course material on emergency mass feeding. Through more than 3,600 local ANRC chapters, training in first aid, home nursing, and emergency mass feeding was provided to many local civil defense personnel. Special assistance at the community level was also provided in shelter management training as well as in shelter planning and promotion of medical self-help training.

Through liaison with the ANRC, effective use was made of community and civil defense resources in helping to overcome the effects of natural disasters. Experience of the ANRC in dealing with many types of disaster continued to be a valuable source of guidance in developing civil defense readiness.

ADVISORY COMMITTEE ON SHELTERS

This section of the report and appendix 3 include the information on advisory committees required by section 10(a) of Executive Order 11007, February 27, 1962.

The Advisory Committee on the Design and Construction of Public Fallout Shelters (frequently called the Construction Industry Civil Defense Advisory Committee) was the only advisory committee that served the Office of Civil Defense during fiscal year 1966. The committee was approved by the Director of Civil Defense for continuation through June 30, 1968, and increased from 13 to 15 members with the admission of the Consulting Engineers Council to full membership. The chairman is a full-time, salaried official of the OCD, and the membership includes representatives from the American Institute of Architects, the American Institute of Planners, the American Society of Civil Engineers, the National Society of Professional Engi-

neers, the Engineers Joint Council, the Associated General Contractors of America, Inc., and the Consulting Engineers Council.

The committee reviewed OCD programs and activities of interest to architects, engineers, planners, and contractors, and suggested improvements. Major committee recommendations and advice concerned: (1) Administration of a professional development program by contract, (2) an experimental program for incorporating shelter in new buildings, (3) professional advisory services, (4) building codes study, and (5) student development. Committee members used news media of their own organization to disseminate information on the professional and faculty development programs in support of civil defense.

William P. Durkee
Director of Civil Defense

Appendix I

DESCRIPTION OF PUBLIC FALLOUT SHELTER SUPPLIES

General Shelter Supplies and Radiation Kits

Figure 25 shows shelter supplies packaged for storage in quantity that would be sufficient to take care of 50 persons for 14 days. The contents are described in the following paragraphs.

Food rations.—Food rations, providing 10,000 calories and amounting to 5 pounds in weight per shelteree, are austere but adequate for sedentary conditions and estimated duration of shelter occupancy. The food is packaged in hermetically sealed cans having a capacity of 2½ or 5 gallons. These containers and special formulation of the food products are expected to assure that the food will remain usable for as long as 15 years after storage.

The Armed Forces Food and Container Institute, now the Army Natick Laboratories, developed specifications for the food items. There are: (1) A survival biscuit—a baked wheat flour biscuit containing small amounts of corn and soy flour—developed by the National Biscuit Co. for the New York State Civil Defense Commission; (2) a survival cracker—a baked wheat-corn cracker containing more corn flour than the survival biscuit, but no soy flour—developed by the Midwest Research Institute for the State of Nebraska; (3) a bulgur wafer—containing parboiled bulgur wheat that has been dried, puffed, and blended with several ingredients—developed by the U.S. Department of Agriculture; and (4) a carbohydrate supplement containing sucrose, glucose, and flavorings—adapted from a standard product in accordance with a military specification.

The physiological fuel value of each of the four dry food items is approximately 2,000 calories per pound. The basic ration of 10,000 calories per shelteree contains proper components of protein, carbohydrate, and fat. The protein content is low, since consumption of high-protein foods increases renal activity and would require consumption of water in excess of limited amounts expected to be available in shelters. In accordance with established nutritional requirements, the carbohydrate supplement is limited to one-third the weight of the total food ration. The ration contains sufficient salt to preserve body fluids, but vitamin fortification is not necessary, but deficiencies in calcium,

Figure 25.—Public fallout shelter supplies for 50 persons.

phosphorous, or potassium would not be of serious consequence during the limited period of shelter occupancy.

Food rations do not provide for special nutritional requirements of infants, young children, pregnant women, or those who are aged or ill. Special foods required by them must be brought into the shelter by the individuals or families concerned.

Sanitation kits.—Sanitation kits, designed for waste disposal during shelter occupancy, are provided. Two kits are available: one with supplies to serve 25, and the other with supplies to serve 50 persons.

Each kit includes a 17½-gallon fiber drum packaged with toilet seat, toilet tissue, commode chemical, sanitary napkins, drinking cups for individual use, and other items. Packaged with each kit are instructions for its use. The toilet seat is designed to be used with the fiber drum as a chemical toilet, and as water containers are emptied, they can be used in the same manner. This method of waste disposal has been used satisfactorily in shelter occupancy tests conducted as part of OCD research projects.

Assembly of the kits is on the schedule of *Blind Made Products* under terms of the Wagner-O'Day Act of June 1938 (52 Stat. 1196; 41 U.S.C. 46–48). Workshops for the blind throughout the country therefore assemble the individual kit items. The National Industries for the Blind selects these workshops and competitively procures the kit components through centralized procedures that assure the advantage of volume purchasing. Eleven workshops have performed the task of assembling sanitation kits.

Medical kits.—Medical kits are provided in 2 sizes: one to serve 50–65 persons, the other to serve 300–325. These kits contain different quantities of identical items that provide an austere capability to save lives and alleviate suffering by (1) preventing disease and checking its transmission, (2) controlling emotional stress, and (3) controlling disease symptoms to alleviate pain and prevent complications. Medication and devices are not provided for chronic diseases, childbirth, or for purposes that require a high degree of professional proficiency.

Since health status, skills proficiency, and professional ability of shelter occupants can be estimated only generally, the kits are designed for nonprofessional use and contain nontechnical instruction booklets. The U.S. Public Health Service, Division of Health Mobilization, and DOD medical authorities have approved the items in the kit. Contents are adequate to serve emergency needs generally of normal, healthy persons. Persons having special health problems will need to make provisions for them prior to entering a shelter.

Water containers.—The containers are 17½-gallon, lightweight steel drums supplied with a double polyethylene liner. The drums are filled at the shelter site with water from sources meeting Public Health Service standards. One container is intended to serve five

shelterees, and tests have shown that this method is suitable for long-range storage of potable water. During shelter occupancy, the empty water containers may be converted to chemical toilets by using appropriate items contained in the sanitation kits.

Radiation kit (see fig. 16 in part IV).—At least one radiation kit, to be used by trained radiological monitors, is supplied each public fallout shelter. The kit contains: (1) A low range beta-gamma discriminating survey meter (CD V–700), known as a Geiger counter, for monitoring personnel, food, and water; (2) a high-range survey meter (CD V–715) or ion chamber for monitoring inside and outside the shelter; (3) two dosimeters (CD V–742) for measuring personnel exposure; and (4) a dosimeter charger (CD V–750) to reset and recharge the dosimeters.

Use of this equipment during shelter occupancy will enable the radiological monitor to (1) locate the shelter area offering greatest protection, (2) evaluate contamination of personnel and material brought into the shelter, (3) determine when adjoining areas are sufficiently free of radiation to be used for relieving overcrowding, (4) control radiation exposure of persons performing emergency functions, and (5) provide radiological data on the surrounding area to the shelter manager and the local emergency operations center.

Packaged Ventilation Kit (PVK)

The PVK is packaged in two units. Unit A, weighing 103 pounds and having a volume of 8.6 cubic feet, contains a fan assembly with a stand, duct adapter, and accessories. Unit B, weighing 38.5 pounds and having a volume of 5 cubic feet, contains a drive module with saddle, pedals, chain, and handlebar. Figure 26 shows the two units in use. This is known as a type I PVK. The kit may also be issued as a type II PVK which includes two B-units and permits two persons to operate the fan. (See fig. 7 in part III.) The fan may be operated electrically as well as manually.

During fiscal year 1966, 2,400 PVK units were procured for use in selected public fallout shelters in community shelter planning areas having unfilled requirements for standard fallout shelters. (See *Major Emphasis* in part II.) The shelteree capacity of inadequately ventilated public fallout shelters can be increased considerably by this means.

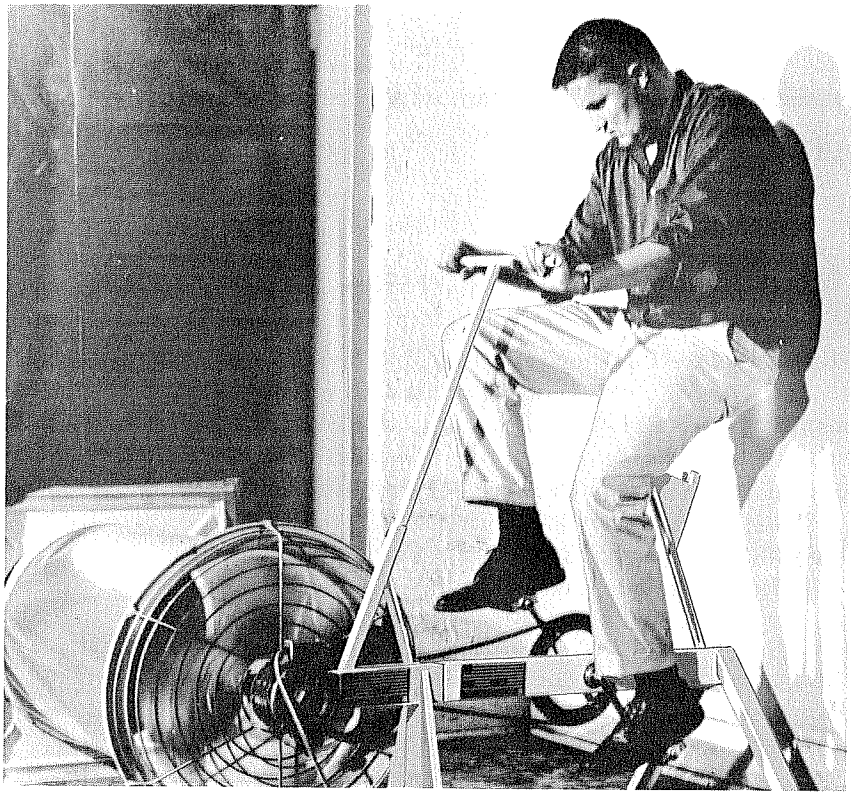


Figure 26.—Type I packaged ventilation kit in use. The air discharge assembly, with duct adapter, operates through the doorway as fresh air enters the room through distant openings.

Appendix 2

NUMBER 3020.32
June 20, 1966

ASD(I&L)

DEPARTMENT OF DEFENSE DIRECTIVE

SUBJECT: Department of Defense Policy for the Development and Utilization of Fallout Shelters

References: (a) Section 608 of Public Law 89–188, dated September 16, 1965
(b) DOD Directive C–3020.7, "Department of Defense Protective Construction Policy," March 1, 1962
(c) DOD Directive 3020.27, "Department of Defense Shelter Policy," July 22, 1965 (hereby canceled)

I. PURPOSE

This Directive provides uniform guidance on objectives, policies and criteria for determining the nature of fallout shelter requirements, and for developing a plan for fallout shelter programs at all Department of Defense installations in implementation of reference (a).

II. APPLICABILITY AND SCOPE

The provisions of this Directive apply to the Military Departments, including Reserve and National Guard activities, and to the Defense Agencies (hereinafter referred to collectively as DOD Components), and their installations in the 50 States, the Military District of Washington, Puerto Rico, and the Territories and Possessions of the United States.

III. CANCELLATION

Reference (c) is hereby canceled.

IV. DEFINITIONS

For purposes of this directive, the following definitions will apply:

A. *DOD Fallout Shelter*—A structure or contiguous group of structures, or space therein, meeting DOD standards for pro-

245-764 O - 67 - 9

tection of the occupants from fallout gamma radiation, which is available for inclusion in a shelter plan to provide protection for all personnel who are considered to be the responsibility of the Department of Defense.

B. *DOD Public Fallout Shelter Space*—Excess space in DOD fallout shelters available for public use.

C. *Public Fallout Shelter*—A structure or contiguous group of structures, or space therein, provided by the civilian community for the protection of the public from fallout gamma radiation.

D. *Department of Defense Responsibility*—Personnel who are considered to be the responsibility of the Department of Defense include military and civilian personnel regularly assigned to DOD installations, as well as those whose duty assignments, regular domicile (including dependents) or conduct of routine business or service operations would cause them to be present on a DOD installation during the greater part of the working day.

E. *Operational Personnel*—Military and civilian personnel engaged in DOD missions which must continue to be performed during an emergency.

F. *Construction*—The erection, installation, or assembly of a new facility; the addition, or expansion, extension, alteration, conversion, or replacement of an existing facility; or the relocation of a facility from one installation to another. Includes equipment installed and made a part of such facilities, and related site preparation, excavation, filling, and landscaping, or other land improvements.

G. *Protection Factor (PF)*—The relative reduction in the amount of radiation that would be received by a person in a protected location compared to the amount he would receive if he were unprotected. *Example:* A shelter with a PF of 40 means that a person inside the shelter would be exposed to a dose rate of 1/40th of that to which he would be exposed in the same location if unprotected.

H. *Installation*—A fixed, or relatively fixed, location together with the real estate, buildings, structures, utilities, and improvements thereon. Usually identified with an existing or potential organization and missions or functions.

I. *Adjacent Community*—An inhabited area under the jurisdiction of civilian authority which is so located with respect to a DOD installation that the people living therein can feasibly use available DOD shelter spaces on the installation if there is a deficiency of shelter in their community.

V. POLICY

A. The Department of Defense has a requirement to provide DOD fallout shelter for all personnel for which it has a responsibility. In addition, the Department of Defense, by its actions and example, can further demonstrate to the public its preparedness for any eventuality, including nuclear attack.

B. The objective for all military installations is the provision of fallout shelter space for all personnel for which the Department of Defense is responsible, either under the provisions of this directive or pursuant to reference (b) which covers the protection of operational personnel. Measures taken under reference (b) will be integrated with the overall measures taken by each DOD Component to cover all personnel for which it is responsible.

C. To the extent that military operational considerations permit, DOD fallout-shelter spaces excess to the requirements of an installation shall be made available to adjacent communities with shelter deficits.

D. Each DOD Component will:

1. Plan for provision of protective shelters for all personnel who live or work on military installations. Criteria contained in enclosure 1 will be considered as minimums in determining existing fallout shelter capabilities and in programming shelter construction. Until provision is made for adequate fallout protection for all installation personnel (see IV.D above), use will be made of the best available protective shelter space even though it does not meet the minimum standards. Survival plans will provide for the use of expedient shelters.

2. Design all construction (see IV.F) above, except under the conditions noted below, to incorporate shelter space when such can be done without impairing the purpose for which the construction is authorized or the effectiveness of the structure, and where expenditures on individual projects will not exceed 1 percent of the amount authorized for that project. Exceptions pursuant to the provisions of reference (a):

a. Where there is a deficiency of DOD fallout shelter space on an installation and available public fallout shelter space suitable to installation needs exists in adjacent communities in accordance with local community shelter plans, this space will be used to satisfy the installation deficiency.

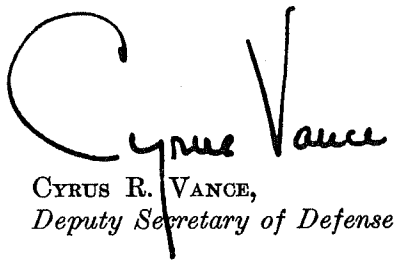
b. When sufficient DOD fallout shelter space meeting the criteria contained in the enclosure 1 is available on an installation, no further costs will be incurred for the provision of additional shelter space in new construction or major alterations.

E. The policies and programs set forth in Chapter 8, Section V., "Protective Construction Policy," of the Joint Logistics and Personnel Policy and Guidance (U), JCS Publication 3, and implementing DOD Directive C–3020.7 (reference (b)), will continue to apply.

F. Each DOD Component will develop a protective construction program to meet its operational survival requirements based on guidance to be provided by the Assistant Secretary of Defense (Installations and Logistics).

VI. EFFECTIVE DATE AND IMPLEMENTATION

This directive is effective immediately. Two (2) copies of implementing instructions of all DOD Components will be forwarded to the Assistant Secretary of Defense (Installations and Logistics) within sixty (60) days.



CYRUS R. VANCE,
Deputy Secretary of Defense

Enclosure—1
Minimum Requirements for
DOD Fallout Shelters

MINIMUM REQUIREMENTS FOR DOD FALLOUT SHELTERS

1. *Shielding*—Category 2, PF–40, or above.
2. *Capacity*—Fifty (50) or more persons per building or facility. This will be interpreted to mean:
   a. Shelter areas that are not large enough to accommodate 50 persons should be used as shelter provided they are interconnected by shielded passageways.
   b. The shelter capacity of a structure should be determined by totaling the various shelter area capacities.
   c. The minimum sized shelter area within a building meeting the above criteria shall not have a capacity less than ten (10) persons.
3. *Space:*
   a. *Floor Area:* At least 10 square feet of net shelter space per person is required.
   b. *Head Room:* A minimum of 6½ feet for at least 50% of the occupants and not less than 4 feet for the remainder is required.
   c. *Volume, aboveground areas:*
      (1) If naturally ventilated, use 65 cubic feet net space per person.
      (2) If mechanically ventilated, or if natural ventilation is limited, use the appropriate volume from table 1 below.
   d. *Volume, belowground areas:*
      (1) If mechanically ventilated, use the appropriate volume from table 1 below.
      (2) If no mechanical ventilation is available, use 500 cubic feet net space per person. However, if the amount of natural ventilation can be readily determined, use the volume from table 1 below.

TABLE 1

*Rate of air change (minutes)**	*Fresh air supply (cfm./person)*	*Volume of space required (cu. ft./person)*
22	3. 00	65
35	2. 85	100
60	2. 50	150
100	2. 00	200
200	1. 50	300
400	1. 00	400
600	0. 75	450
1, 000	0. 50	500

*Computed as the ratio: $\frac{\text{Net Volume of Space (Cu. Ft.)}}{\text{Fresh Air Supply (cfm.)}}$

e. When space is determined on a volume basis, either above or below ground, include the volume of areas adjacent to or surrounding the shelter area.

4. *Ventilation:*
   a. If space is based on less than 500 cubic feet of net shelter space per person, the minimum ventilation required will be as shown in table 1.
   b. Three (3) cfm per person allows the minimum floor area.
   c. Mechanical ventilating equipment must include filters capable of removing at least 90% of 50 micron particles, or larger.
5. *Access:*
   a. At least one per shelter area.
   b. At least two widely separated means of access for each building except in special facilities, each of which shall be not less than 24 inches wide. At least one 22-inch width shall be provided for every 200 people sheltered.
6. *Safety:*
   No hazards which cannot be alleviated or corrected in an emergency.
7. *Storage:*
   At least 1 cubic foot per person in or accessible to the shelter.
8. *Structural Stability:*
   a. Natural caves or caverns by the nature of their existence for long periods of time will be considered to have demonstrated sufficient structural stability to warrant marking.
   b. Mines and other man-made underground structures, excavated in sound formations of igneous, sedimentary or metamorphosed rocks, which are presently being operated or have been in use within 1 year will also be considered structurally acceptable for marking. However, idle mines in limestone, dolomite and some igneous formations should only be marked if knowledge of their structural soundness is available.
   c. Tunnels designed by conventional methods and lined where necessary with standard materials such as concrete, steel and brick will be considered structurally acceptable for marking unless there is evidence of obvious defects.

Appendix 3

Office of Civil Defense Instruction

OFFICE OF THE SECRETARY OF THE ARMY

DATE August 5, 1966 NUMBER 5120.2

MGT(MO)

ADVISORY COMMITTEE ON THE DESIGN AND CONSTRUCTION OF FALLOUT SHELTERS

References: (a) Federal Civil Defense Act of 1950, as amended (50 U.S.C. App. 2251–2297)
(b) Executive Order 10952 of July 20, 1961
(c) DOD Directive 5160.50 of March 31, 1964
(d) Secretary of the Army memorandum of April 1, 1964, Organization and Operation of the Office of Civil Defense and Delegation of Administrative Authorities for Civil Defense Functions

1. General

By virtue of the authority contained in reference (a), as redelegated to me by reference (b), (c), and (d), I hereby continue the Civil Defense Advisory Committee on the Design and Construction of Fallout Shelters. The purpose, membership, and operation of the committee are set forth below.

2. Purpose

The purpose of the Committee is to advise the Director of Civil Defense in the following matters:

a. Review and make recommendations on the technical problems related to fallout shelter design and construction including Federal programs to overcome fallout shelter deficits.

b. Provide means for effective communications relating to shelter design and construction between the Office of Civil Defense and the membership of the associations named below.

c. Recommend methods of stimulating shelter construction through development of plans and designs, by reducing shelter construction costs, and by communicating technical information conducive to shelter construction to architects, engineers, contractors, and building owners.

3. Membership

This Committee shall be representative of the American Institute of Architects, the American Society of Civil Engineers, the Associated General Contractors of America, Incorporated, the National Society of Professional Engineers, the Engineers Joint Council, the American Institute of Planners and the Consulting Engineers Council. Total membership shall consist of 15 members.

a. There shall be two members from each of the seven professional organizations named above. One of the two members shall be an officer, the other a staff member, of the organization represented.

b. One member, a full time, salaried Government official designated by the Director of Civil Defense, shall be Chairman of the Committee.

c. If a vacancy occurs on the Committee, it shall be filled in the same manner as the original appointment.

4. Operation

a. The Committee shall be organized and operated in accordance with the references and with applicable DOD and OCD directives and instructions.

b. The Chairman shall call each meeting of the Committee, and shall formulate the agenda of each meeting. He shall make provision for taking minutes of each meeting, and shall certify the accuracy of summary minutes thereof. He shall have the authority to adjourn any meeting whenever he feels that its continuation would not be in the public interest.

c. The functions of the Committee are solely advisory, and any determination of action to be taken, based in whole or in part on such advice, shall be made by the Director of Civil Defense.

William P. Durkee

WILLIAM P. DURKEE
Director of Civil Defense

DISTRIBUTION:
D(HqProfPers)
H(RegProfPers)
Staff College (10 cys)

MEMBERSHIP LIST

ADVISORY COMMITTEE ON THE DESIGN AND CONSTRUCTION OF PUBLIC FALLOUT SHELTERS

Meeting Dates—January 21, 1966 and March 7, 1966

Designee	*Name, Title, and Affiliation*	*Address*
1. Chairman	Mr. James E. Roembke, staff director, Architectural and Engineering Services Division, Technical Services, Office of Civil Defense.	The Pentagon, Washington, D.C. 20310.
Representatives from the American Institute of Architects:		
2. Officer	Mr. John W. McLeod, board member, executive director, Washington Metropolitan Chapter, American Institute of Architects.	1705 DeSales St. NW., Washington, D.C. 20006.
3. Staff member	Mr. William H. Scheick, executive director, American Institute of Architects.	1735 New York Ave. NW., Washington, D.C. 20006.
Alternate staff member.	Mr. Elliott Carroll, administrator of Public Services, American Institute of Architects.	Do.
Representatives from the American Society of Civil Engineers:		
4. Officer	Mr. Howard G. Dixon, president, Howard G. Dixon, Inc.	284 Putnam Ave., Freeport, N.Y. 11520.
5. Staff member	Mr. William H. Wisely, executive secretary, American Society of Civil Engineers.	345 East 47th St., New York, N.Y. 10017.
Alternate staff member.	Mr. D. P. Reynolds, assistant executive secretary, American Society of Civil Engineers.	Do.
Representatives from the Associated General Contractors of America, Inc.:		
6. Officer	Mr. John E. HealyII, John E. Healy & Sons, Inc.	707 Tatnall St., Wilmington, Del. 19801.
7. Staff member	Mr. William Dunn, executive secretary, Associated General Contractors of America, Inc.	20th and E Sts. NW., Washington, D.C. 20006.
Alternate staff member.	Mr. John K. Bowersox, director, Building Division, Associated General Contractors of America, Inc.	Do.

Representatives from the National Society of Professional Engineers:

Designee	Name, Title, and Affiliation	Address
8. Officer	Mr. John H. Stufflebean, president, National Society of Professional Engineers.	211 West Pennington St., Tucson, Ariz. 85701.
Alternate officer.	Mr. Leo Ruth, vice president, National Society of Professional Engineers.	919 The Alameda, San Jose, Calif. 95126.
9. Staff member	Mr. Paul Robbins, executive director, National Society of Professional Engineers.	2029 K St. NW., Washington, D.C. 20006.

Representatives from the Engineers Joint Council:

10. Officer	Mr. R. H. Tatlow III, president, Abbott, Markt & Co., Inc.	630 3d Ave., New York, N.Y. 10017.
11. Staff member	Mr. Carl Fry, secretary, Engineers Joint Council.	345 East 47th St., New York, N.Y. 10017.

Representatives from the American Institute of Planners:

12. Officer	Vacancy	
13. Staff member	Mr. Robert L. Williams, executive director, American Institute of Planners.	917 15th St. NW., Room 800, Washington, D.C. 20005.

Representatives from the Consulting Engineers Council:

14. Officer	Mr. J. Gibson Wilson, Jr., J. Gibson Wilson and Associates.	1469 Church St. NW., Washington, D.C. 20005.
15. Staff member	Mr. Donald A. Buzzell, executive director, Consulting Engineers Council.	1155 15th St. NW., Washington, D.C. 20005.

Appendix 4

CHEMICAL AND BIOLOGICAL DEFENSE

The OCD has tested mass production techniques for a protective mask. Should the need arise, these techniques could be made available to manufacturers. However, studies conducted for the Department of Defense indicate that the threat to the United States posed by chemical and biological agents is relatively less significant than that posed by the nuclear threat. Chemical agents are not considered a major strategic threat, as they are effective mainly if used against tactical targets of limited area. Although the possibility of employment of biological agents against population centers cannot be ruled out, neither a chemical nor a biological threat against the continental United States warrants, at this time, the attention and priority given to defense against the effects of nuclear weapons. But Department of Defense research on methods of detecting, identifying, reporting, and analyzing biologicals, as well as on methods of defense against them, will continue; meanwhile this potential threat is kept under constant review.

Appendix 5

AFL-CIO Resolution No. 186[1]

CIVIL DEFENSE AND EMERGENCY PLANNING

In this tense and troubled world, preparedness for the defense and maintenance of the civilian sector is no less urgent than preparedness of the military. As President Johnson has said, "although we must have an everlasting concern for peace and must strive for reasonable disarmament proposals, our strength lies in preparedness. I consider preparedness in the civil activities of government to be an essential element of our total defense, necessary to and complementing military defense."

It is clear that even in a nuclear attack, substantial segments of our population, our communities, our communications and our transportation systems, and our productive capacity, would survive. However, whether they could be restored and integrated into a workable and viable economy, and to an acceptable level of social order with effective civilian control, requires advanced plans for survival and recovery. For these reasons, it is essential that the necessary time, energy and money be devoted to programs of civilian defense and emergency planning, while we continue to hope and to work for a world in which peace is secure. Therefore, be it

RESOLVED: 1. The AFL-CIO supports the current efforts of the Department of Defense to provide for the defense of civilians and of the Office of Emergency Planning to provide preparedness programs which seek to assure the maintenance of the civilian sector, under civilian authority, with maximum possible reliance on voluntary cooperation of the private economy. However, advocate more vigorous action to step up our state of readiness to meet an emergency.

2. Although the survival of no individual can be insured by any measures, the survival of our nation and many millions of our people can be assisted by adequate preparations. We call upon the federal government, both the Executive and the Congress, to provide whatever national leadership is required, including financing, for a far-reaching national program of civilian defense. We are especially mindful of the need for group shelters to meet the needs of citizens in our heavily-populated cities for whom a program of individual shelters is meaningless.

[1] Adopted at the Sixth Constitutional Convention, AFL-CIO, San Francisco, Calif., Tuesday, Dec. 14, 1965.

3. Our efforts to survive a nuclear attack must be concerned with our ability to reconstruct our society on a democratic basis. Toward this end, we urge the Office of Emergency Planning to increase its efforts to develop its programs, so as to assure political and economic continuity, together with its plans for a continuity of civil authority. In this regard, we are encouraged by the widespread participation in the readiness program of thousands of leaders of the private sector of the economy, including representatives of the trade union movement, who are cooperating with state and federal officials in developing our capacity to manage our resources in the event of an emergency.

4. Economic stabilization programs—prepared for the advent of national emergency which would include wage, price, and rent controls, as well as materials allocation, both in the determination of policy and in the administrative application—should be accomplished under the guidance of bodies that represent all groups in our society, including organized labor, at all levels of government.

U.S. GOVERNMENT PRINTING OFFICE: 1967 O—245-764